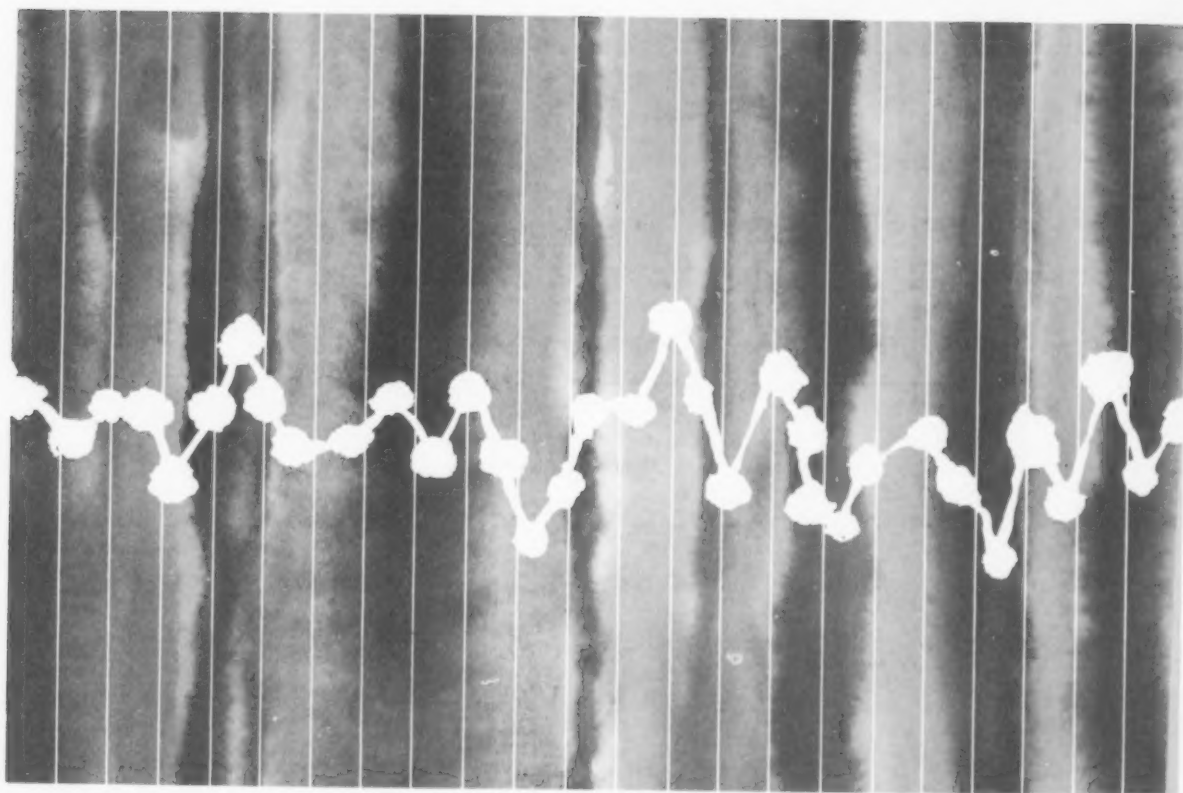


# defense indicators

MARCH 1977



U.S. DEPARTMENT OF COMMERCE • BUREAU OF ECONOMIC ANALYSIS



This report was prepared in the Statistical Indicators Division, Bureau of Economic Analysis. Technical staff and their responsibilities for the publication are--

Barry A. Beckman--Technical supervision and review,

Morton Somer--Selection of seasonal adjustment methods,

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The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through September 1, 1977.

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# defense indicators

March 1977  
Series ES4 No. 77-3

	Page
Introduction .....	1
Table A. Summary of Recent Data and Current Percent Changes for Principal Defense Indicators .....	4
Chart 1. Gross National Product and National Defense Purchases ...	5
Chart 2. Advance Indicators of Defense Activity .....	6
Chart 3. Intermediate and Final Indicators of Defense Activity ....	9
Chart 4. Defense-Related Balance of Payments Components .....	13
Table 1. Gross National Product and National Defense Purchases ...	14
Table 2. Advance Indicators of Defense Activity .....	15
Table 3. Intermediate and Final Indicators of Defense Activity ....	22
Table 4. Defense-Related Balance of Payments Components .....	27
Appendix A: Seasonal Adjustment Factors .....	28
Appendix B: Average Changes and Related Measures of Variability ..	29
Appendix C: Historical Data ( <i>See Alphabetical Index—Series Finding Guide</i> )	
Appendix D: Data Sources and Series Descriptions ( <i>See Alphabetical Index—Series Finding Guide</i> )	
Alphabetical Index—Series Finding Guide .....	Back Cover

## 6 BEA PROJECTS for economic analysis

### **BUSINESS CONDITIONS DIGEST** A monthly report for analyzing economic fluctuations over a short span of years.

This report brings together many of the economic time series found most useful by business analysts and forecasters. The dominant feature is the cyclical indicators section in which approximately 110 business cycle indicators are each assigned a three-way timing classification according to their cyclical behavior at peaks, at troughs, and at all turns. This section also contains other valuable aids for the analysis of business conditions and prospects, such as composite indexes of leading, coincident, and lagging indicators and various diffusion indexes. A second section contains other important economic measures such as prices, wages, productivity, government activities, U.S. international transactions, and international comparisons.

Data are presented in charts and tables. Appendixes provide historical data, series descriptions, seasonal adjustment factors, and measures of variability. A computer tape containing data for most of the series is available for purchase.

### **DEFENSE INDICATORS** A monthly report for analyzing the current and prospective impact of defense activity on the national economy.

This report brings together the principal time series on defense activities which influence short-term changes in the national economy. These include series on obligations, contracts, orders, shipments, inventories, expenditures, employment, and earnings. The approximately 60 time series included are grouped in accordance with the time at which the activities they measure occur in the defense order-production-delivery process. Charts and analytical tables facilitate interpretation.

### **LONG TERM ECONOMIC GROWTH** A report for the study of economic trends over a long span of years, 1860-1970.

This report has been developed from available statistics to provide a comprehensive, long-range view of the U.S. economy. It is a basic research document for economists, historians, investors, teachers, and students. It brings together under one cover, in meaningful and convenient form, the complete statistical basis for a study of long-term economic trends. A computer tape file of the time series included in the report is available for purchase.

### **COMPUTER PROGRAMS FOR TIME SERIES ANALYSIS** The source statements for FORTRAN IV programs used by BEA in its analysis of time series are available on a single computer tape.

**SEASONAL ADJUSTMENT PROGRAMS.**—Two variants of the Census computer program for measuring and analyzing seasonal, trading-day, cyclical, and irregular fluctuations. They are particularly useful in analyzing economic fluctuations which take place within a year. The X-11 variant is used for adjusting monthly data and the X-11Q for quarterly data. These programs make additive as well as multiplicative adjustments and compute many summary and analytical measures.

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This report provides a useful combination of current data for more than 2,500 statistical series and significant articles analyzing economic developments. These data and analyses include such areas as the national income and product accounts, the balance of payments accounts, plant and equipment expenditures, regional personal income, and the input-output accounts.

### **BUSINESS STATISTICS** A biennial reference volume containing statistical series reported currently in the *Survey of Current Business*.

This report provides historical data back to 1947 for nearly 2,500 time series. The series are accompanied by concise descriptions as to their composition, methods of compilation, comparability, revisions, and availability. Also listed are the names and addresses of organizations which provide the basic data for the series.

## Introduction

The purpose of this monthly report is to bring together the principal time series on defense activity which influence short-term changes in the national economy. These include series on obligations, contracts, orders, shipments, inventories, expenditures, employment, and earnings. Most are monthly but a few quarterly series are included. The series numbers used are for identification purposes only and do not reflect relationships or order.

### Classification of Series

Chart 1 compares Government purchases of goods and services for national defense with total gross national product. GNP is the market value of the final output of goods and services produced by the Nation's economy and represents a very broad measure of aggregate economic activity. In addition to national defense purchases, it includes Federal Government purchases of goods and services for nondefense purposes, State and local government purchases, personal consumption expenditures, gross private domestic investment, and net exports of goods and services. Chart 1 also presents national defense purchases as a percent of gross national product and, for both series, changes from the previous quarter.

A related group of series is shown in Chart 4, "Defense Related Balance of Payments Components." These series show the effects of defense-related economic activity on the balance of payments accounts.

The remaining series are grouped in accordance with the time at which the activities they measure occur within the defense order-production-delivery process. Those series measuring activities that usually precede production, such as new orders placed with defense products industries and contract awards, are presented in Chart 2, "Advance Indicators of Defense Activity." Chart 3, "Intermediate and Final Indicators of Defense Activity," presents series that measure activities which tend to move at the same time as production (such as employment) and activities which usually follow production (such as shipments).

### Series Included

Following is a list of the series as they appear in charts 1, 2, 3, and 4 (the source agencies are abbreviated in parentheses; detailed lists of sources for charts 1, 2, and 3 appeared as appendixes to the August and October 1968 issues of this report).

#### Gross National Product and National Defense Purchases

- Gross national product (BEA)
- Federal Government purchases of goods and services, national defense (BEA)
- National defense purchases as a percent of gross national product (BEA)
- Gross national product, changes from previous quarter (BEA)
- National defense purchases, changes from previous quarter (BEA)

#### Advance Indicators of Defense Activity

- Defense Department gross obligations incurred, total (DOD)
- Defense Department gross obligations incurred, procurement (DOD)
- Gross obligations incurred outside the Government for national defense (Treasury)

- Defense Department military prime contract awards for work performed in the United States (DOD)
- Defense Department gross unpaid obligations outstanding (DOD)
- Manufacturers' new orders (Census):
  - Defense products industries
  - Defense products
- Manufacturers' new orders from the U.S. Government, aerospace industries (Census):
- Average weekly overtime hours, production workers, defense products industries (BLS)
- Accession rate, defense products industries (BLS)
- Layoff rate, defense products industries (BLS)

#### Intermediate and Final Indicators of Defense Activity

- Output of defense and space equipment (FRB)
- Manufacturers' inventories (Census):
  - Defense products industries
  - Defense products
- Manufacturers' unfilled orders (Census):
  - Defense products industries
  - Defense products
- Manufacturers' unfilled orders from the U.S. Government, aerospace industries (Census)
- Defense Department progress payments outstanding (DOD)
- Employment in defense products industries, total (BLS)
- Employment in defense products industries, production workers (BLS)
- Index of aggregate weekly hours, defense products industries (BLS)
- Index of aggregate weekly payrolls, production workers, defense products industries (BLS)
- Defense Department personnel, military, active duty (DOD)
- Defense Department personnel, civilian, direct hire employment (DOD)
- Defense Department net outlays, total, military functions and military assistance (DOD)
- Defense Department net outlays, procurement (DOD)
- Budget outlays for the national defense function (Treasury)
- Defense Department personnel compensation (DOD)
- Manufacturers' shipments (Census):
  - Defense products industries
  - Defense products
- Manufacturers' shipments to the U.S. Government, aerospace industries (Census)
- Ratio, manufacturers' unfilled orders to shipments (Census):
  - Defense products industries
  - Defense products
- Ratio, manufacturers' inventories to shipments (Census):
  - Defense products industries
  - Defense products

#### Defense-Related Balance of Payments Components

- Transfers under U.S. military agency sales contracts—exports (BEA)
- Direct defense expenditures—imports (BEA)
- U.S. Government cash receipts associated with military sales contracts (BEA)

Some additional data are included in the tables though not presented in the charts. These include Defense Department military prime contract awards by procurement category (e.g., for aircraft, missiles and space systems, ships, weapons, and ammunition), the operations component of Defense Department



gross obligations incurred, gross unpaid obligations outstanding, and net outlays and the procurement component of gross unpaid obligations outstanding.

### Description of Basic Data

The Department of Defense compiles statistics on obligations, contract awards, personnel compensation, and outlays. The DOD obligations and outlays data are based on the Defense Department's monthly *Status of Funds* report which is developed from accounting data and is designed to provide information on the total status of Defense Department financing. Accounts included in this report are aggregated by appropriation categories including personnel costs, operations and maintenance, procurement, research and development, and construction. The *Status of Funds* report duplicates some obligations. That is, obligations of one government unit to another unit are not netted out.

The Defense Department's *Contract Awards* report covers the awarding of procurement contracts. These include obligations for operating and maintenance supplies, equipment and services, research and development, and construction in addition to the obligations for items that constitute the fiscal "procurement" category. The statistics are aggregated by commodity categories including aircraft, missile and space systems, ships, weapons, ammunition, electronics and communication equipment, fuels, and textiles and clothing. The *Contract Awards* report includes procurement for NASA, other nondefense agencies, and the Foreign Military Sales Program which are not included in the *Status of Funds* report.

The Census quarterly new orders, unfilled orders and shipments series for "aerospace industries" are based on reports of companies classified into the following industry categories:

Industry	SIC Code
Aircraft and parts .....	372
Guided missiles and space vehicles, completely assembled ..	1925

The Census and BLS data for "defense products industries" presented in this report cover companies and establishments<sup>1</sup> classified into the following industry categories in accordance with the *Standard Industrial Classification Manual*, 1967 edition, Executive Office of the President, Bureau of the Budget:

Industry	SIC Code
Ordnance and accessories .....	19
Communication equipment .....	366
Aircraft and parts .....	372

Establishments reporting to the BLS are classified into industries on the basis of their principal product or activity as determined from information on annual sales volume, which is collected each year on a supplement to the monthly report. The entire employment of an establishment making more than one product or engaging in more than one activity is included under the industry accounting for the largest percentage of the annual sales of that establishment.

The Census Bureau's monthly survey is based primarily on reports at the company level and the monthly estimates are benchmarked to the establishment data from the *Annual Survey*

<sup>1</sup>An establishment is a single physical location where business is conducted (e.g., a plant). A company often includes more than one establishment.

of Manufactures. Also, many of the large diversified companies file separate divisional reports monthly. Although the reports in the survey are also classified according to their principal product or activity, this difference in the organizational level from which reports are received results in firms being classified into different industries in the BLS and Census surveys and, consequently, limits somewhat the comparability of the data collected by these agencies. However, as we know from past studies in this area, some differences in industrial classification between BLS and Census data would remain even if reports came from the same organizational levels.

Both the Census and the BLS data include a significant amount of nondefense activities carried on by companies and establishments classified in the above industries. For example, the data cover the production of commercial as well as military aircraft. On the other hand, they exclude significant amounts of defense work carried on by companies and establishments classified in industries other than those listed above (e.g., the manufacture of military uniforms and the shipbuilding industry).<sup>2</sup>

Census data for "defense products" are based on separate reports on defense work filed by large defense contractors in the ordnance, communications, complete aircraft, aircraft parts, and shipbuilding industries. Thus, they differ from the "defense products industries" data in that they include defense activity in the shipbuilding industry and exclude nondefense work in the other industries covered. Defense products data cover work for the Department of Defense and exclude contracts for the National Aeronautics and Space Administration and the Atomic Energy Commission.

The DOD data are not strictly comparable in coverage with either the BLS or the Census data since the Defense Department figures (1) cover products of industries not included in the defense products category; (2) generally do not include nondefense activities (except that some series, such as contract awards, include activities by the Department of Defense on behalf of nondefense agencies); and (3) do not cover intermediate activities such as those related to subcontracting and supplying of parts. Thus, the Census Bureau data for manufacturers' new orders and shipments of defense products industries, for example, differ in coverage from the DOD contract awards and net outlays series.

The Department of Defense data are not comparable with Federal Government purchases of goods and services for national defense or the Treasury Department obligations and outlays data since the BEA and Treasury data cover defense-related activities of other agencies such as the Atomic Energy Commission, the Selective Service System, and the Office of Emergency Planning.

Projects to improve the comparability of the data collected by the Bureau of the Census, the Bureau of Labor Statistics, and the Department of Defense and to improve the separation of defense and nondefense activity for the Census and BLS data are being undertaken by the statistical agencies under the leadership of the Interagency Committee mentioned earlier in this report.

<sup>2</sup>See the Bureau of the Census publication *Shipments of Defense-Oriented Industries*, Current Industrial Reports, Series MA-175, for annual estimates of shipments by industry to the Department of Defense, the National Aeronautics and Space Administration, and the Atomic Energy Commission. Included also are industries not covered by the "defense products industries" category.

### Variability of Data

Seasonal variations dominate the movements of many time series, and adjustments for average seasonal fluctuations are often necessary to bring out the underlying trends of the series. These seasonal adjustments allow for the effects of repetitive intrayear variations resulting primarily from normal differences in weather conditions and from various institutional arrangements. An additional adjustment is sometimes necessary for series which contain considerable variation resulting from the number of working or trading days in each month. As used in this report, the term "seasonal adjustment" includes trading-day adjustments where they have been made.

Most of the series in this report are shown in seasonally adjusted form. For Defense Department and BLS series, unadjusted data are also shown since they are not readily available elsewhere. Current seasonal adjustment factors are shown in appendix A.

The effect of seasonal adjustment in reducing the month-to-month variation in the data can be seen in appendix B. There, the first two columns show the average month-to-month percent change (without regard to sign) in the data before and after seasonal adjustment. Some series still show very irregular month-to-month movements after adjustment for seasonal variation. The measures in appendix B also indicate the month-to-month variation in the irregular and short-term trend components of the series. For many series, irregular movements tend to dominate 1- or 2-month comparisons, and the underlying short-term trend becomes dominant in comparisons over longer spans. The "months for cyclical dominance" (MCD) measure estimates the span of months required for the short-term trend to dominate the irregular component. Series with an MCD of 4 or more are supplemented with a moving average (with the

number of terms equal to MCD) in the charts. Data for these moving averages are listed in the basic data tables.

### Guide to Charts and Tables

Most series are plotted on a standard ratio scale so that equal percent changes cover the same vertical distance. For these series, an increase of 100 percent covers approximately 1 inch. Arithmetic scales are used for series with zero or negative data, series which could approach zero (e.g., average overtime hours and layoff rate), and series expressed in percent.

In general, monthly data are plotted with a solid line and quarterly data are represented by a solid line with quarterly plot points. Quarterly series are also identified with a "Q" after their titles. For series which include a moving average, a dashed line is used for the actual monthly data and a solid line for the moving average. (The moving average values are centered within the span of months they are computed from.) Exceptions to this scheme may be necessary for special situations. Data apply to the whole period except for series designated "EOM" (end of month) or "EOQ" (end of quarter). The number in the box at the right of each series indicates the latest month (Arabic) or quarter (Roman) plotted. Parallel lines across a series indicate a break in continuity (e.g., data not available or change in series definition).

Tables 1, 2, 3, and 4 present current data for the series shown in the charts, including the moving averages. They also include unadjusted data for some series and data for related series which are not plotted. Table A summarizes the most recent data and percent changes for many of the series in the report. Historical data are shown on an intermittent basis in appendix C. (The index indicates the appropriate issue for each series.)

The April issue of *DEFENSE INDICATORS* is scheduled  
for release on April 29.

# Table A. Summary of Recent Data and Current Percent Changes for Principal Defense Indicators

(Preliminary and revised figures are not identified here but the user may consult tables 1, 2, 3, and 4 where such identification is given)

Series title	Unit of measure	Basic data								Percent change				Series number
		Average		2d Q 1976	3d Q 1976	4th Q 1976	Dec. 1976	Jan. 1977	Feb. 1977	Dec. '76 to Jan. '77	Jan. '77 to Feb. '77	2d Q '76 to 3d Q '76	3d Q '76 to 4th Q '76	
		1975	1976											
GROSS NATIONAL PRODUCT AND NATIONAL DEFENSE PURCHASES														
200. Gross national product (BEA) .....	Ann. rate, bil. dol. ....	1516.3	1691.6	1675.2	1709.8	1745.1	...	...	...	...	...	2.1	2.1	200
284. Federal Government purchases of goods and services, national defense (BEA) .....	.... do .....	84.3	88.2	86.9	88.5	91.3	...	...	...	...	...	1.8	3.2	284
613. National defense purchases as a percent of GNP (BEA) <sup>1</sup> .....	Percent .....	5.6	5.2	5.2	5.2	5.2	...	...	...	...	...	0.0	0.0	613
ADVANCE INDICATORS OF DEFENSE ACTIVITY														
Defense Dept. gross obligations incurred (DOD): 817. Total .....	Ann. rate, bil. dol. ....	98.5	109.9	105.6	101.5	134.5	132.0	118.2	NA	-10.5	NA	-3.9	32.5	617
621. Procurement .....	.... do .....	20.4	24.6	23.6	24.2	30.7	39.2	22.1	NA	-43.6	NA	2.5	26.9	621
623. Gross obligations incurred outside the Federal Government for national defense (Treasury) .....	.... do .....	104.1	NA	114.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	623
625. Defense Department military prime contract awards for work performed in the U.S. (DOD) .....	.... do .....	43.3	50.1	43.9	43.3	65.3	62.4	41.7	NA	-33.2	NA	-1.4	50.8	625
643. Defense Department gross unpaid obligations outstanding (DOD) .....	Bil. dol., end of period .....	41.3	50.1	43.6	42.0	50.1	50.1	50.8	NA	1.4	NA	-3.7	19.3	643
648. Mfrs.' new orders, defense products (Census) .....	Ann. rate, bil. dol. ....	25.2	29.6	30.8	21.2	40.3	48.0	20.4	24.5	-57.5	20.1	-31.2	90.1	648
650. Manufacturers' new orders from the U.S. Government, aerospace industries (Census) .....	.... do .....	18.3	20.3	19.5	16.1	24.0	...	...	...	...	...	-17.4	49.1	650
653. Average weekly overtime hours, production workers, defense products industries (BLS) <sup>1</sup> .....	Hours .....	2.5	2.5	2.4	2.6	2.7	2.8	2.9	NA	0.1	NA	0.2	0.1	653
654. Accessions, defense products industries (BLS) <sup>1</sup> .....	Number per 100 employees ..	1.4	1.6	1.5	1.5	1.7	1.7	NA	NA	NA	NA	0.0	0.2	654
655. Layoffs, defense products industries (BLS) <sup>1</sup> .....	.... do .....	1.2	0.7	0.6	0.8	0.6	0.4	NA	NA	NA	NA	0.2	-0.2	655
INTERMEDIATE AND FINAL INDICATORS OF DEFENSE ACTIVITY														
657. Output of defense and space equipment (FRB) ...	1967=100 ...	80.0	77.9	77.9	78.1	77.9	77.4	77.5	79.6	0.1	2.7	0.3	-0.3	657
659. Mfrs.' inventories, defense products (Census) .....	Bil. dol., end of period ...	6.6	6.6	6.8	6.8	6.6	6.6	6.6	NA	0.0	NA	0.0	-2.9	659
661. Mfrs.' unfilled orders, defense products (Census) ..	.... do .....	29.2	32.2	30.3	29.2	32.2	32.2	31.5	31.0	-2.2	-1.6	-3.6	10.3	661
664. Manufacturers' unfilled orders from the U.S. Government, aerospace industries (Census) .....	.... do .....	21.8	22.9	22.5	22.0	22.9	...	...	...	...	...	-2.2	4.1	664
666. Defense Department progress payments outstanding (DOD) <sup>2</sup> .....	.... do .....	11.3	8.5	12.0	11.9	8.5	...	...	...	...	...	-0.8	-28.6	666
Employment in defense products industries (BLS):														
670. Total .....	Thousands .....	1,118	1,064	1,069	1,056	1,057	1,060	1,061	NA	0.1	NA	-1.2	0.1	670
671. Production workers .....	.... do .....	570	531	535	524	524	524	529	NA	1.0	NA	-2.1	0.0	671
673. Index of aggregate weekly hours, defense products industries (BLS) .....	1967=100 .....	66.0	62.4	62.8	62.3	62.4	62.7	63.0	NA	0.5	NA	-0.8	0.2	673
675. Index of aggregate weekly payrolls, production workers, defense products industries (BLS) .....	.... do .....	100.5	101.2	99.8	100.9	103.3	103.8	106.3	NA	2.4	NA	1.1	2.4	675
Defense Department personnel (DOD): <sup>3</sup>														
677. Military, active duty .....	Thousands, end of period .....	2,064	2,072	2,082	2,084	2,072	2,072	2,077	2,078	0.2	0.0	0.1	-0.6	677
678. Civilian, direct hire employment .....	.... do .....	1,028	995	1,010	997	995	995	994	NA	-0.1	NA	-1.3	-0.2	678
Defense Department net outlays (DOD):														
680. Total, military functions and military assistance .....	Ann. rate, bil. dol. ....	88.5	88.3	85.7	95.8	88.0	85.2	91.0	99.7	6.8	9.6	11.8	-8.1	680
682. Procurement .....	.... do .....	16.2	16.4	16.9	15.2	18.8	21.4	19.1	19.8	-10.7	3.7	-10.1	23.7	682
683. Budget outlays for the national defense function (Treasury) .....	.... do .....	92.5	89.1	87.7	96.1	90.5	90.4	85.0	97.6	-6.0	14.8	9.6	-5.8	683
685. Defense Dept. personnel compensation (DOD) .....	.... do .....	34.6	35.5	35.1	35.7	36.4	37.1	35.4	NA	-4.6	NA	1.7	2.0	685
688. Mfrs.' shipments, defense products (Census) .....	.... do .....	23.7	26.5	25.9	25.7	26.2	29.6	28.8	31.4	-2.7	9.0	-0.8	9.7	688
689. Manufacturers' shipments to the U.S. Government, aerospace industries (Census) .....	.... do .....	17.3	19.1	20.2	18.1	19.9	...	...	...	...	...	-10.4	9.9	689
691. Ratio, manufacturers' unfilled orders to shipments, defense products (Census) .....	Ratio .....	14.5	13.4	13.9	13.7	13.2	13.1	13.2	11.8	0.8	-10.6	-1.4	-3.6	691
693. Ratio, manufacturers' inventories to shipments, defense products (Census) .....	.... do .....	3.1	3.0	3.1	3.2	2.9	2.7	2.8	NA	3.7	NA	3.2	-9.4	693
DEFENSE-RELATED BALANCE OF PAYMENTS COMPONENTS														
546. Transfers under U.S. military agency sales contracts-exports (BEA) <sup>1</sup> .....	Ann. rate, mil. dol. ....	3,897	5,204	4,256	6,296	5,724	...	...	...	...	...	2,040	-572	546
547. Direct defense expenditures-imports (BEA) <sup>1</sup> .....	.... do .....	4,760	4,813	4,876	4,940	4,832	...	...	...	...	...	64	-108	547
696. U.S. Government cash receipts associated with military sales contracts (BEA) <sup>1</sup> .....	.... do .....	4,591	8,269	7,572	8,080	8,328	...	...	...	...	...	508	248	696

NOTE: This table is presented as a convenient summary of the current data for many of the indicators in this report. In many cases, data shown here are rounded to fewer digits or are in different units than those shown in tables 1, 2, 3, and 4. Where available, annual figures are those published by the source agencies; otherwise they (and the quarterly figures for monthly series) are averages or totals of the data as shown in the data tables. Series are seasonally adjusted except for those indicated by <sup>2</sup>, which appear to contain no seasonal movement.

NA = not available.

<sup>2</sup>Differences rather than percent changes are shown for this series.



CHART  
1

# Gross National Product and National Defense Purchases

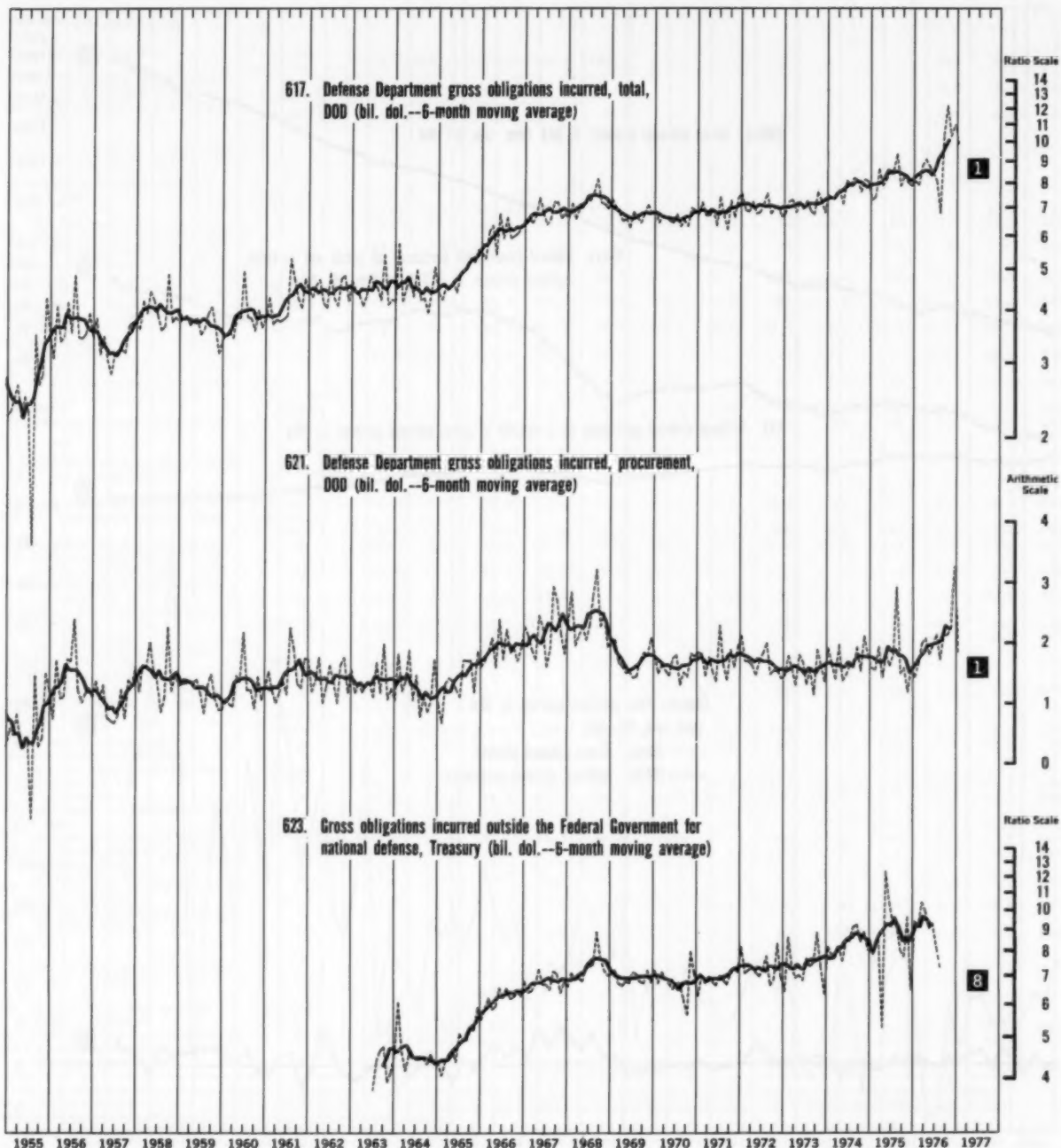


Current data for these series are shown on page 14.

CHART

2

## Advance Indicators of Defense Activity

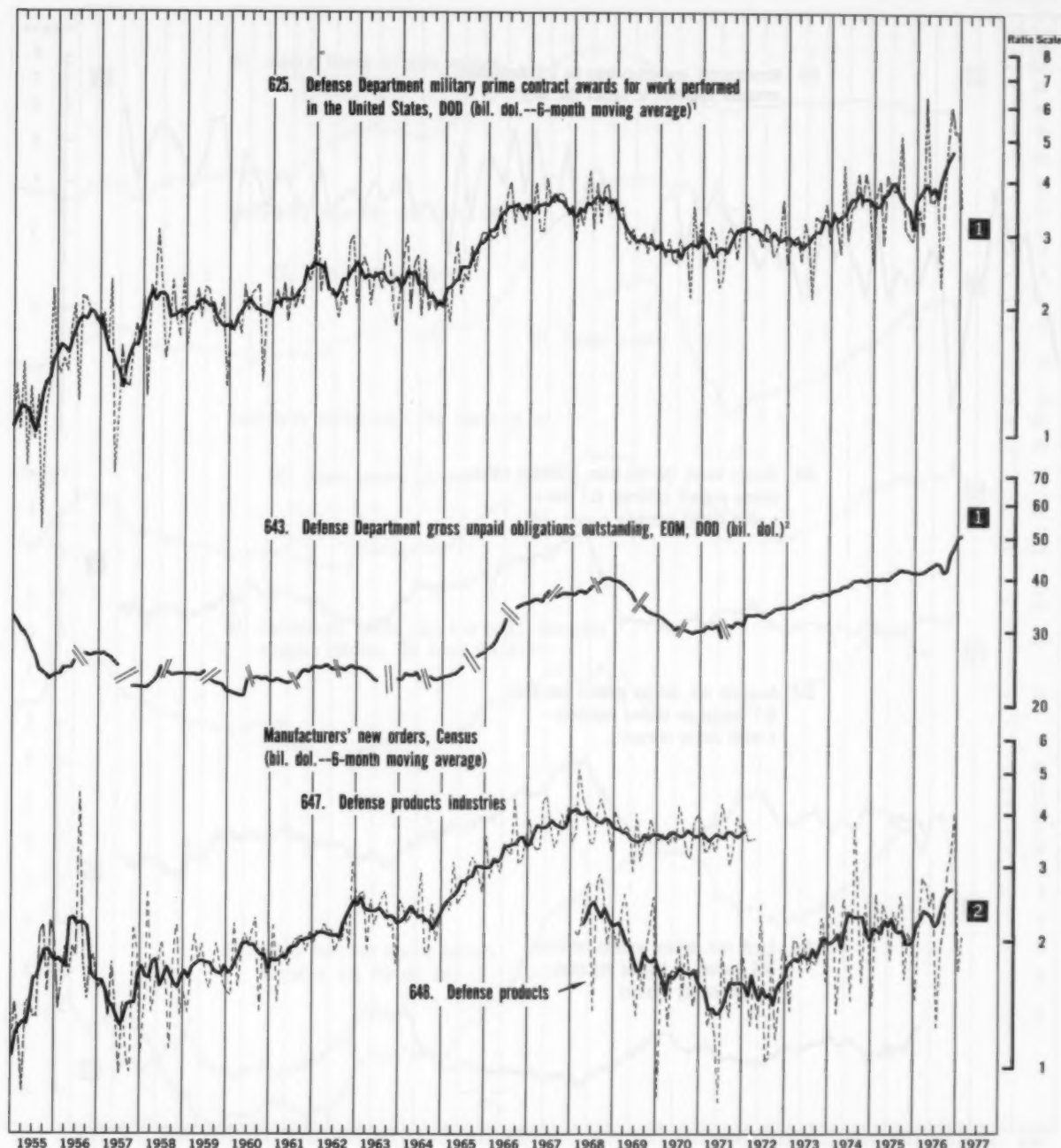


Current data for these series are shown on pages 15 and 16.

CHART

2

# Advance Indicators of Defense Activity--Continued

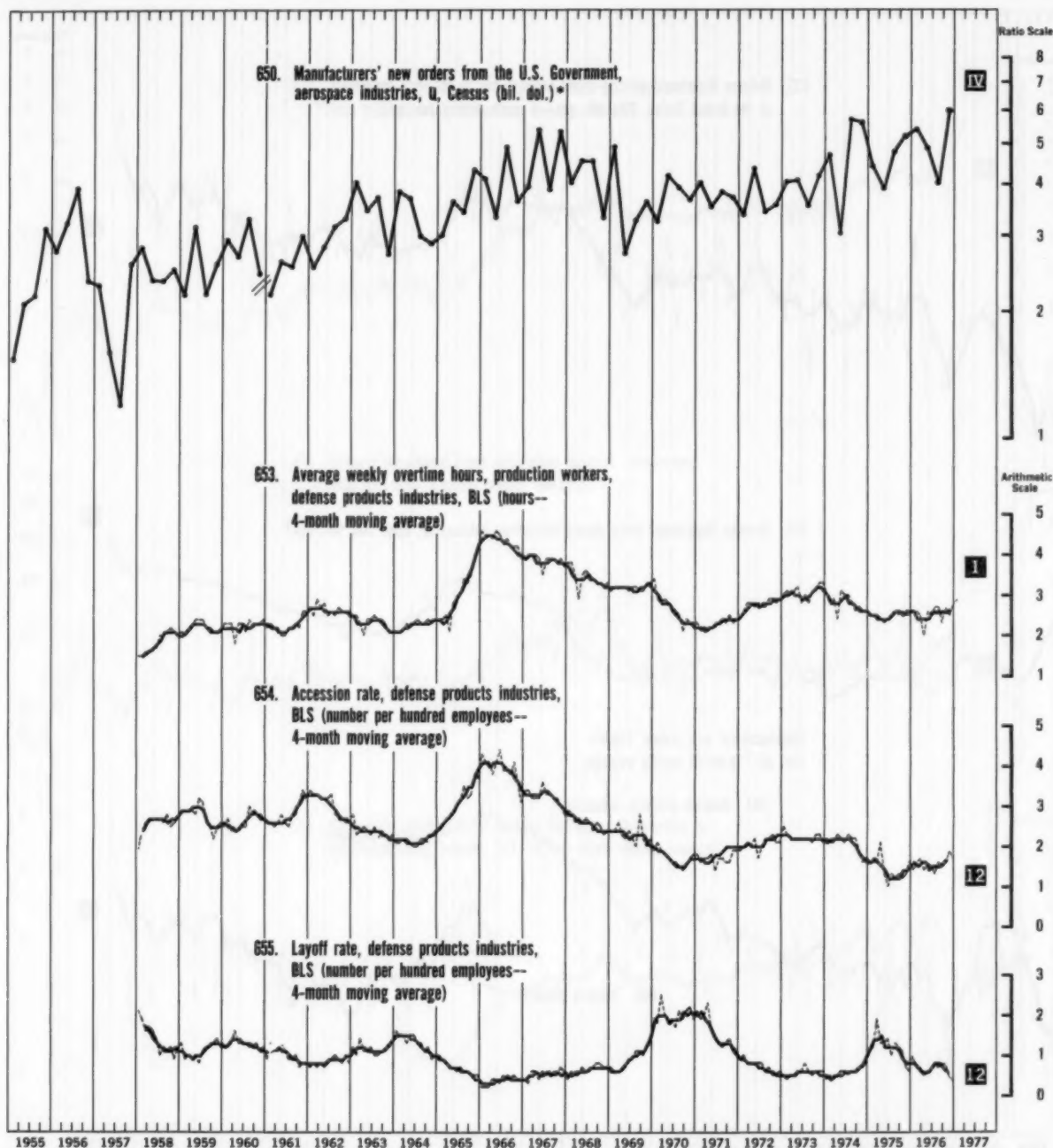


<sup>1</sup> Data prior to July 1955 exclude orders written to other Government agencies.  
<sup>2</sup> Data for the following months not available: July of 1956-71; August of 1956-57 and 1963-66; September of 1957, 1963, and 1965; and October and November of 1963.  
 Current data for these series are shown on pages 16 and 20.

CHART

2

# Advance Indicators of Defense Activity--Continued

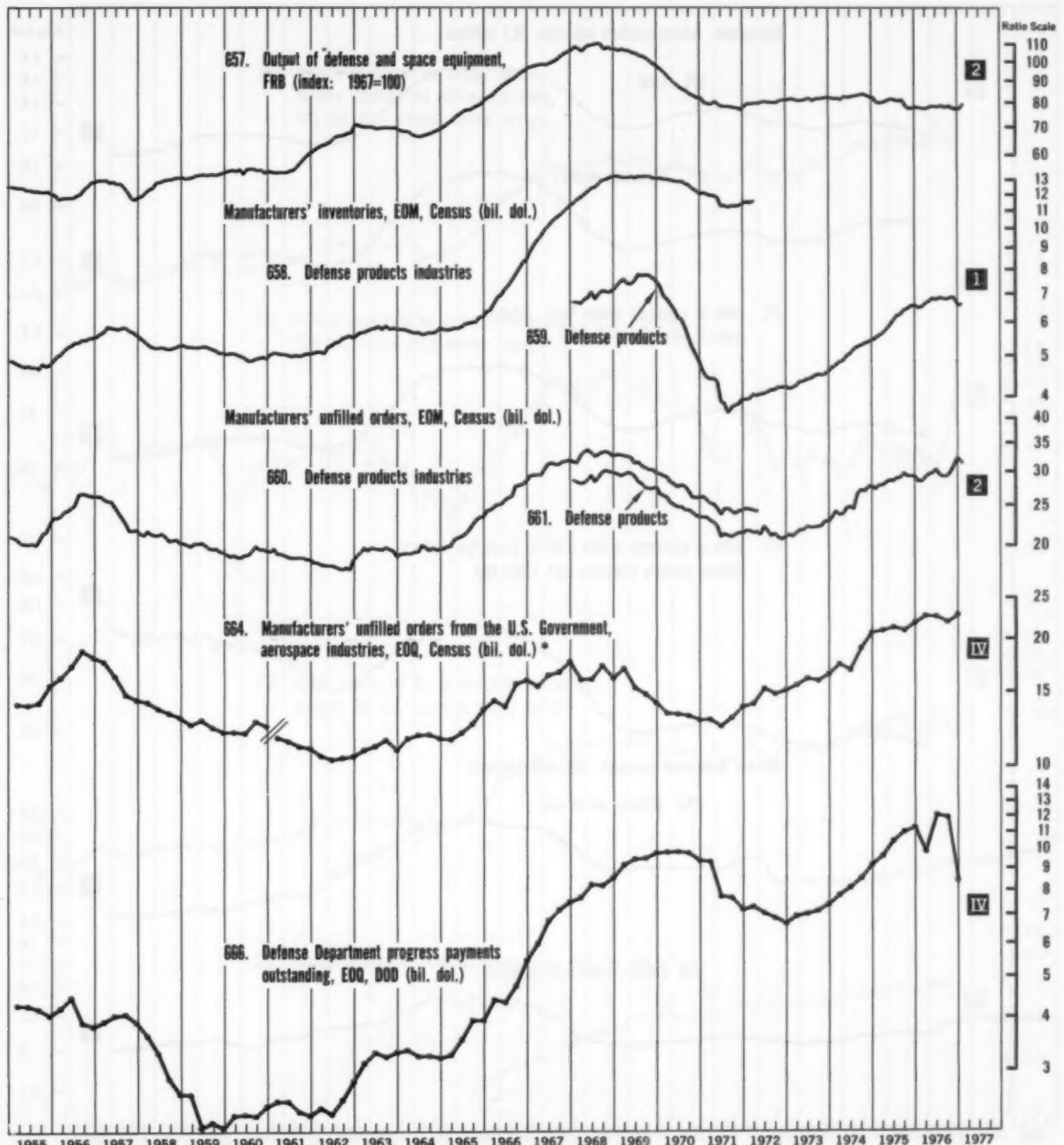


\*Data prior to 1961 include orders from non-Government customers.  
Current data for these series are shown on pages 20 and 21.

CHART

3

# Intermediate and Final Indicators of Defense Activity



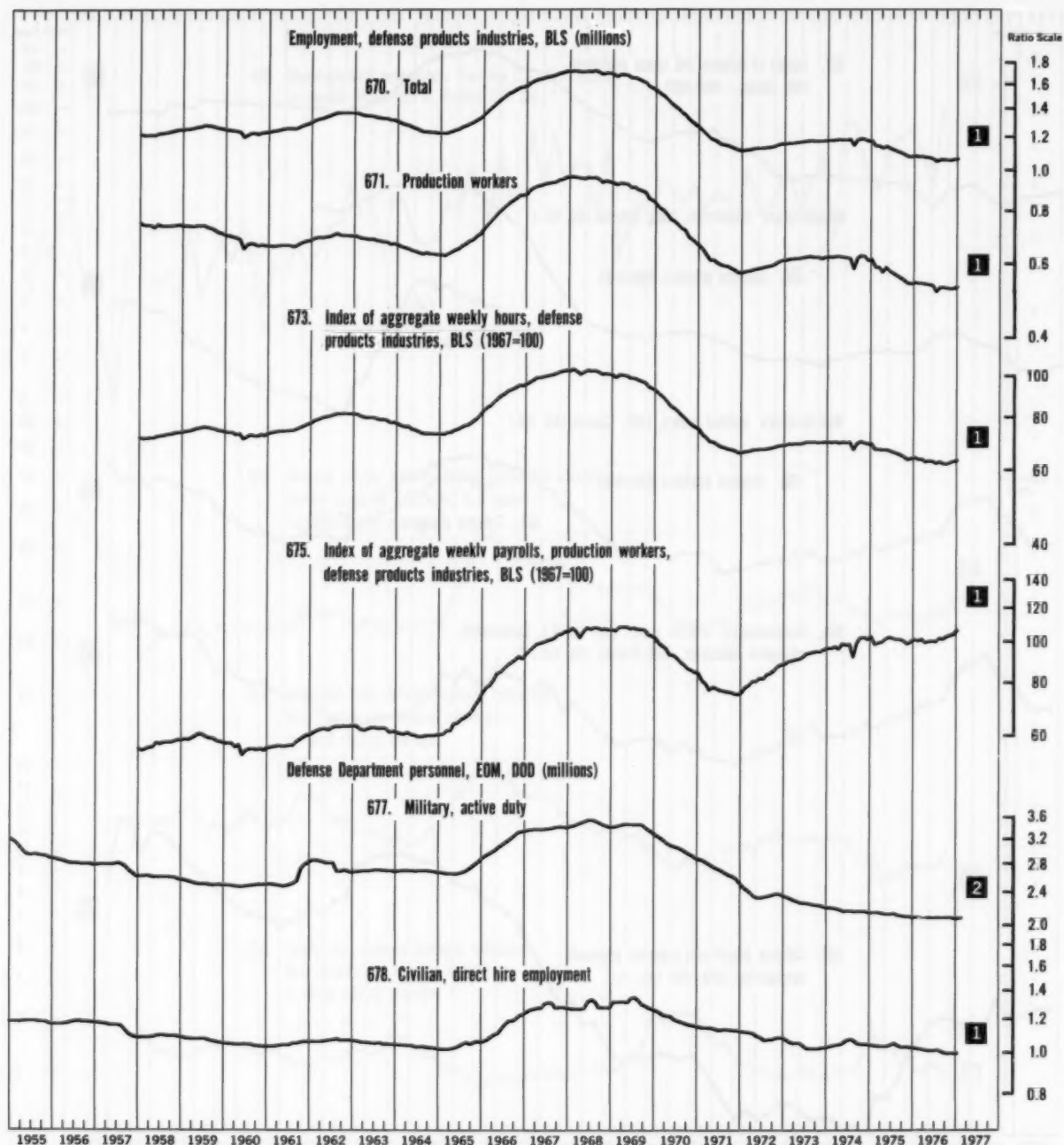
\* Data prior to 1961 include orders from non-Government customers.  
Current data for these series are shown on page 22.



CHART

3

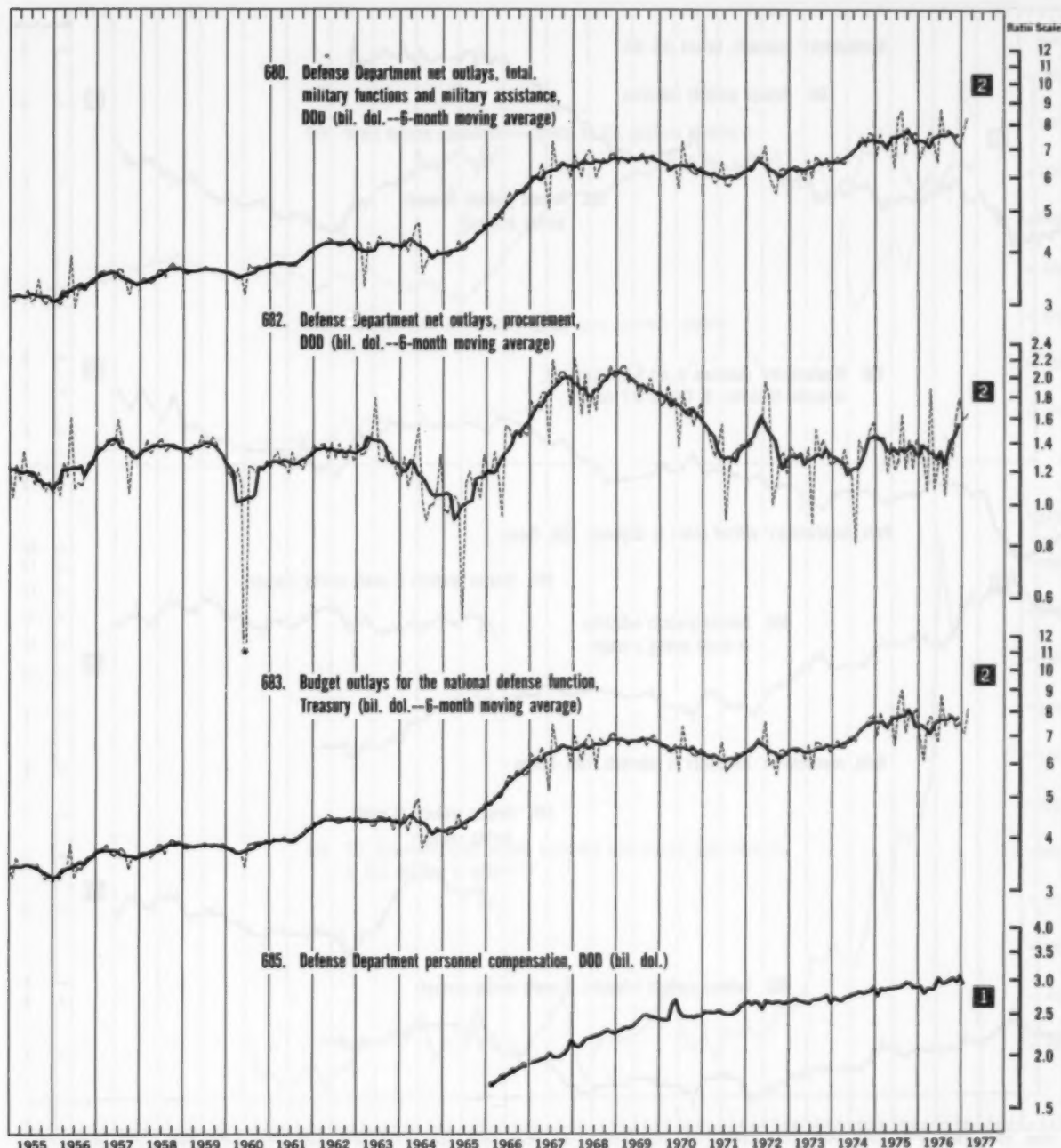
# Intermediate and Final Indicators of Defense Activity--Continued



CHART

3

# Intermediate and Final Indicators of Defense Activity--Continued



\*Net expenditures for procurement, June 1960--\$245 million.  
Current data for these series are shown on pages 24 and 25.

CHART

3

# Intermediate and Final Indicators of Defense Activity--Continued



\*Data prior to 1961 include shipments to non-Government customers.  
Current data for these series are shown on page 26.

CHART

4

# Defense-Related Balance of Payments Components



\*See footnotes 1 and 2 on page 27.  
Current data for these series are shown on page 27.

# defense indicators

TABLE

1

## Gross National Product and National Defense Purchases

Year and quarter	200(a). Gross national product, BEA*	264(a). Federal Government purchases of goods and services, national defense, BEA*	613. National defense purchases as a percent of gross national product, BEA*	200(b). Change in gross national product, BEA*	264(b). Change in Federal Government purchases of goods and services, national defense, BEA*
	(Ann. rate, bil. dol.)	(Ann. rate, bil. dol.)	(Percent)	(Ann. rate, bil. dol.)	(Ann. rate, bil. dol.)
1973					
First quarter . . . . .	1,265.3	74.1	5.9	45.9	0.8
Second quarter . . . . .	1,288.4	73.1	5.7	23.1	-1.0
Third quarter . . . . .	1,317.5	72.5	5.5	29.1	-0.6
Fourth quarter . . . . .	1,355.1	74.4	5.5	37.6	1.9
1974					
First quarter . . . . .	1,372.7	74.9	5.5	17.6	0.5
Second quarter . . . . .	1,399.4	75.9	5.4	26.7	1.0
Third quarter . . . . .	1,431.6	78.2	5.5	32.2	2.3
Fourth quarter . . . . .	1,449.2	80.2	5.5	17.6	2.0
1975					
First quarter . . . . .	1,446.2	82.0	5.7	-3.0	1.8
Second quarter . . . . .	1,482.3	83.4	5.6	36.1	1.4
Third quarter . . . . .	1,548.7	84.6	5.5	66.4	1.2
Fourth quarter . . . . .	1,588.2	87.1	5.5	39.5	2.5
1976					
First quarter . . . . .	1,636.2	86.2	5.3	48.0	-0.9
Second quarter . . . . .	1,675.2	86.9	5.2	39.0	0.7
Third quarter . . . . .	1,709.8	88.5	5.2	34.6	1.6
Fourth quarter . . . . .	r1,745.1	91.3	5.2	r35.3	2.8
1977					
First quarter . . . . .					
Second quarter . . . . .					
Third quarter . . . . .					
Fourth quarter . . . . .					

Note: All data on this page are seasonally adjusted. NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See page 5.)



## Advance Indicators of Defense Activity

Year and month	Defense Department gross obligations incurred, DOD							
	617. Total			619. Operations		621. Procurement		
	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data— 6-month*	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data— 6-month*
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975								
January .....	8,252	7,341	7,916	5,471	5,148	1,895	1,603	1,772
February .....	6,904	7,467	7,958	4,604	5,220	1,569	1,575	1,755
March .....	7,526	8,677	7,956	4,787	5,251	1,994	1,960	1,701
April .....	7,403	7,933	8,033	5,424	5,209	1,147	1,448	1,674
May .....	6,796	8,199	8,246	4,761	5,121	1,147	1,813	1,711
June .....	11,027	8,593	8,569	6,275	5,560	2,693	1,644	1,939
July .....	9,903	8,614	8,440	6,641	5,624	1,510	1,827	1,865
August .....	9,812	9,406	8,516	5,337	5,327	2,508	2,940	1,891
September .....	7,705	7,907	8,494	5,203	5,442	1,506	1,515	1,790
October .....	9,045	8,387	8,395	6,130	5,660	1,733	1,605	1,784
November .....	6,976	8,069	8,304	4,829	5,334	1,320	1,206	1,722
December .....	7,156	7,925	8,064	4,895	5,373	1,428	1,612	1,511
1976								
January .....	8,652	8,132	8,220	6,010	5,729	1,697	1,453	1,594
February .....	7,206	7,962	8,344	4,745	5,203	1,664	1,672	1,676
March .....	8,241	8,842	8,461	4,995	5,354	2,093	2,014	1,779
April .....	8,677	9,134	8,556	5,946	5,764	1,688	2,096	1,841
May .....	6,825	8,772	8,553	4,828	5,419	1,155	1,828	1,958
June .....	11,319	8,491	8,365	5,949	5,059	3,218	1,963	1,971
July .....	9,593	8,116	8,628	6,362	5,369	1,812	2,157	1,993
August .....	7,427	6,833	9,148	5,055	5,010	1,458	1,747	2,003
September .....	9,840	10,424	9,412	6,120	6,335	2,152	2,147	2,075
October .....	12,635	12,255	9,831	7,447	7,012	2,312	2,157	2,289
November .....	9,620	10,355	10,120	5,561	6,145	2,497	2,258	2,237
December .....	9,903	11,003	(NA)	5,341	5,882	2,855	3,270	(NA)
1977								
January .....	9,838	9,848		6,352	6,114	2,138	1,842	
February .....	(NA)	(NA)		(NA)	(NA)	(NA)	(NA)	
March .....								
April .....								
May .....								
June .....								
July .....								
August .....								
September .....								
October .....								
November .....								
December .....								

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See page 6.)

# defense indicators

TABLE

2

## Advance Indicators of Defense Activity--Continued

Year and month	623. Gross obligations incurred outside the Federal Government for national defense, Treasury		Defense Department military prime contract awards for work performed in the United States, DOD						
			625. Total			626. Aircraft		627. Missile and space systems	
	Seasonally adjusted*	Moving average of seasonally adjusted data--6-month*	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data--6-month*	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975									
January .....	8,069	8,422	3,567	3,693	3,494	1,062	...	346	...
February .....	8,271	7,694	3,321	3,987	3,488	509	1,873	276	1,206
March .....	8,590	8,472	2,625	2,817	3,513	421	...	244	...
April .....	5,335	p8,863	2,914	4,122	3,720	316	...	377	...
May .....	12,426	p9,084	2,713	3,926	3,744	386	1,524	242	1,451
June .....	p10,487	p9,259	6,626	3,773	3,925	732	...	537	...
July .....	9,397	p9,176	4,376	3,842	3,969	810	...	661	...
August .....	9,321	p9,592	5,295	5,072	3,776	1,254	2,413	1,070	1,465
September .....	8,092	p9,137	3,179	3,080	3,600	469	...	379	...
October .....	7,830	8,479	3,174	2,961	3,493	817	...	463	...
November .....	9,697	8,492	2,608	2,872	3,420	373	1,770	498	1,316
December .....	6,537	8,467	2,870	3,130	3,074	483	...	426	...
1976									
January .....	9,476	8,870	3,288	3,407	3,612	546	...	341	...
February .....	9,168	9,235	2,529	2,993	3,716	356	2,744	278	1,234
March .....	10,511	9,142	5,356	6,309	3,832	2,064	...	243	...
April .....	10,022	p9,616	2,600	3,586	3,946	326	...	290	...
May .....	9,137	p9,410	2,563	3,565	3,751	576	2,694	213	1,375
June .....	p9,383	p9,100	6,843	3,817	3,863	1,562	...	602	...
July .....	8,238	(NA)	2,592	2,234	3,633	416	...	287	...
August .....	7,307		3,969	3,665	4,025	914	2,011	422	845
September .....	(NA)		4,934	4,929	4,294	799	...	521	...
October .....			6,269	5,942	r4,524	896	...	771	...
November .....			4,580	5,175	4,731	r1,140	r3,661	r1,060	r2,346
December .....			r4,543	r5,198	(NA)	r1,442		639	
1977									
January .....			3,360	3,478		955		355	
February .....			(NA)	(NA)		(NA)		(NA)	
March .....									
April .....									
May .....									
June .....									
July .....									
August .....									
September .....									
October .....									
November .....									
December .....									

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See pages 6 and 7.)

## Advance Indicators of Defense Activity--Continued

Year and month	Defense Department military prime contract awards for work performed in the United States, DOD--Continued						
	628. Ships, not seasonally adjusted	629. Weapons and ammunition		630. Electronic and communications equipment		631. Combat vehicles	
		Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January .....	325	125	...	414	...	21	...
February .....	251	160	537	331	1,404	66	268
March .....	11	217	...	535	...	52	...
April .....	621	147	...	313	...	23	...
May .....	94	128	577	587	1,305	86	191
June .....	858	672	...	696	...	161	...
July .....	250	52	...	394	...	126	...
August .....	814	126	545	470	1,410	70	259
September .....	439	95	...	430	...	90	...
October .....	80	128	...	439	...	67	...
November .....	114	66	375	445	1,280	14	172
December .....	211	146	...	332	...	62	...
1976							
January .....	310	76	...	263	...	48	...
February .....	124	101	348	305	1,110	26	238
March .....	1,213	148	...	442	...	61	...
April .....	306	158	...	348	...	32	...
May .....	65	135	447	381	1,204	63	415
June .....	346	450	...	735	...	512	...
July .....	506	52	...	207	...	4	...
August .....	91	90	1,112	506	1,478	150	242
September .....	396	418	...	664	...	119	...
October .....	861	108	...	410	...	252	...
November .....	153	r121	r453	r710	r1,778	r47	683
December .....	178	r173	...	r566	...	r204	...
1977							
January .....	283	90	...	427	...	74	...
February .....	(NA)	(NA)	...	(NA)	...	(NA)	...
March .....	...	...	...	...	...	...	...
April .....	...	...	...	...	...	...	...
May .....	...	...	...	...	...	...	...
June .....	...	...	...	...	...	...	...
July .....	...	...	...	...	...	...	...
August .....	...	...	...	...	...	...	...
September .....	...	...	...	...	...	...	...
October .....	...	...	...	...	...	...	...
November .....	...	...	...	...	...	...	...
December .....	...	...	...	...	...	...	...

NA=not available; p=preliminary; r=revised; e=estimated.

defense indicators

TABLE

2

Advance Indicators of Defense Activity--Continued

Year and month	Defense Department military prime contract awards for work performed in the United States, DOD--Continued							
	632. Other hard goods		633. Soft goods		634. Construction		635. Services	
	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975								
January .....	154	...	217	...	168	...	307	...
February .....	143	497	704	1,489	134	481	341	1,396
March .....	152	...	191	...	127	...	201	...
April .....	147	...	164	...	156	...	190	...
May .....	165	487	121	658	291	838	211	925
June .....	399	...	213	...	1,073	...	574	...
July .....	104	...	811	...	82	...	634	...
August .....	115	532	307	937	61	486	570	1,136
September .....	150	...	256	...	178	...	204	...
October .....	201	...	173	...	149	...	216	...
November .....	156	631	214	687	56	605	210	523
December .....	179	...	244	...	176	...	121	...
1976								
January .....	190	...	817	...	85	...	244	...
February .....	180	590	330	1,611	107	448	256	1,111
March .....	166	...	187	...	151	...	230	...
April .....	173	...	221	...	198	...	179	...
May .....	159	434	120	780	213	611	158	881
June .....	316	...	243	...	791	...	587	...
July .....	92	...	287	...	79	...	335	...
August .....	177	792	513	646	196	1,073	504	1,018
September .....	324	...	171	...	403	...	429	...
October .....	105	...	1,760	...	42	...	660	...
November .....	226	r600	220	2,603	r82	r385	r391	r1,356
December .....	r199	...	295	...	136	...	275	...
1977								
January .....	213	...	163	...	125	...	241	...
February .....	(NA)	...	(NA)	...	(NA)	...	(NA)	...
March .....	...	...	...	...	...	...	...	...
April .....	...	...	...	...	...	...	...	...
May .....	...	...	...	...	...	...	...	...
June .....	...	...	...	...	...	...	...	...
July .....	...	...	...	...	...	...	...	...
August .....	...	...	...	...	...	...	...	...
September .....	...	...	...	...	...	...	...	...
October .....	...	...	...	...	...	...	...	...
November .....	...	...	...	...	...	...	...	...
December .....	...	...	...	...	...	...	...	...

NA=not available; p=preliminary; r=revised; e=estimated.

## Advance Indicators of Defense Activity--Continued

Year and month	Defense Department military prime contract awards for work performed in the United States, DOD--Continued					640. Defense Department military prime contract awards for work outside the United States, DOD	
	636. Contracts under \$10,000		637. Educational and nonprofit institutions		638. Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), not seasonally adjusted	Not seasonally adjusted	Seasonally adjusted
	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted			
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January .....	372	...	51	...	5	114	...
February .....	345	1,144	61	205	0	93	388
March .....	419	...	53	...	2	96	...
April .....	418	...	42	...	0	73	...
May .....	367	1,141	35	201	0	86	813
June .....	635	...	76	...	0	558	...
July .....	263	...	184	...	5	244	...
August .....	345	1,218	92	253	1	149	317
September .....	409	...	80	...	0	124	...
October .....	374	...	67	...	0	252	...
November .....	412	1,273	50	192	0	164	941
December .....	408	...	82	...	0	255	...
1976							
January .....	327	...	39	...	2	286	...
February .....	416	1,156	48	163	2	95	681
March .....	405	...	44	...	2	139	...
April .....	300	...	68	...	1	147	...
May .....	430	1,100	50	254	0	93	609
June .....	625	...	73	...	1	306	...
July .....	253	...	74	...	0	208	...
August .....	351	1,458	55	142	0	132	424
September .....	615	...	74	...	1	347	...
October .....	201	...	203	...	0	575	...
November .....	303	r892	127	r415	0	107	962
December .....	r358	...	r78	...	0	175	...
1977							
January .....	365	...	69	...	0	362	...
February .....	(NA)	...	(NA)	...	(NA)	(NA)	...
March .....	...	...	...	...	...	...	...
April .....	...	...	...	...	...	...	...
May .....	...	...	...	...	...	...	...
June .....	...	...	...	...	...	...	...
July .....	...	...	...	...	...	...	...
August .....	...	...	...	...	...	...	...
September .....	...	...	...	...	...	...	...
October .....	...	...	...	...	...	...	...
November .....	...	...	...	...	...	...	...
December .....	...	...	...	...	...	...	...

NA=not available; p=preliminary; r=revised; e=estimated.



# defense indicators

TABLE

2

## Advance Indicators of Defense Activity--Continued

Year and month	Defense Department gross unpaid obligations outstanding, DOD						648. Manufacturers' new orders, defense products, Census		650. Manufacturers' new orders from the U.S. Government, aerospace industries, Census, seasonally adjusted*
	643. Total		644. Operations		645. Procurement				
	Not seasonally adjusted	Seasonally adjusted*	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data—6-month*	
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975									
January .....	40,819	40,052	7,997	7,625	25,484	24,838	1,398	2,004	...
February .....	40,008	39,875	7,520	7,626	25,452	24,568	2,576	2,147	4,415
March .....	39,473	40,198	7,169	7,775	25,688	25,259	1,996	2,118	...
April .....	38,589	39,918	7,276	7,794	24,932	24,957	2,445	2,080	...
May .....	37,120	40,086	6,746	7,713	24,321	25,099	2,266	2,242	3,912
June .....	39,557	40,959	7,303	8,005	25,311	25,438	1,799	2,167	...
July .....	e41,470	e41,437	e8,733	e8,548	e25,167	e25,370	2,367	2,262	...
August .....	43,248	42,140	8,677	8,132	26,070	26,684	2,130	2,123	4,783
September .....	43,084	41,805	8,677	8,216	26,002	26,479	2,563	2,095	...
October .....	43,754	41,845	9,259	8,247	26,081	26,238	1,610	2,118	...
November .....	42,767	41,468	8,804	8,353	25,810	25,707	2,100	1,963	5,227
December .....	41,551	41,309	8,261	8,241	25,507	25,305	1,937	1,974	...
1976									
January .....	42,110	41,358	8,947	8,548	25,503	24,905	1,440	2,017	...
February .....	41,512	41,459	8,538	8,681	25,586	24,841	2,194	2,197	5,414
March .....	41,046	41,866	7,966	8,658	25,783	25,277	2,818	2,247	...
April .....	41,029	42,494	8,253	8,827	25,606	25,657	2,690	2,360	...
May .....	39,742	42,970	7,795	8,914	25,125	25,929	2,401	2,326	4,878
June .....	42,152	43,612	8,037	8,780	26,508	26,482	2,614	2,280	...
July .....	43,366	43,251	8,939	8,717	26,537	27,162	1,239	2,169	...
August .....	42,525	41,406	8,569	8,025	26,346	26,802	1,919	2,204	r4,036
September .....	43,351	42,047	8,615	8,160	26,832	27,185	2,153	2,335	...
October .....	47,890	45,813	10,624	9,484	27,632	27,827	2,901	2,566	...
November .....	48,988	47,517	10,700	10,184	28,934	28,733	3,186	r2,642	p5,994
December .....	50,354	50,103	10,374	10,353	29,348	29,202	3,998	p2,663	...
1977									
January .....	51,694	50,780	11,150	10,660	29,966	29,465	r1,698		
February .....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	p2,044		
March .....									
April .....									
May .....									
June .....									
July .....									
August .....									
September .....									
October .....									
November .....									
December .....									

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See pages 7 and 8.)

## Advance Indicators of Defense Activity--Continued

Year and month	653. Average weekly overtime hours, production workers, defense products industries, BLS			654. Accession rate, defense products industries, BLS			655. Layoff rate, defense products industries, BLS		
	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data--4-month*	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data--4-month*	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data--4-month*
	(Hours)	(Hours)	(Hours)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)
1975									
January .....	2.4	2.5	2.6	1.4	1.6	1.6	1.2	1.1	1.0
February .....	2.4	2.5	2.5	1.3	1.6	1.6	1.3	1.2	1.2
March .....	2.3	2.5	2.5	1.3	1.6	1.7	2.1	1.9	1.4
April .....	2.1	2.4	2.4	1.9	2.1	1.6	1.4	1.3	1.4
May .....	2.0	2.3	2.4	1.3	1.3	1.5	1.3	1.3	1.5
June .....	2.5	2.4	2.4	1.7	1.0	1.4	1.3	1.4	1.2
July .....	2.2	2.5	2.4	1.6	1.3	1.2	0.8	1.0	1.2
August .....	2.6	2.6	2.5	1.6	1.2	1.2	1.2	1.3	1.2
September .....	2.8	2.5	2.6	1.7	1.3	1.2	1.0	1.2	1.2
October .....	2.7	2.6	2.6	1.4	1.2	1.2	1.0	1.1	1.1
November .....	2.7	2.5	2.5	1.0	1.3	1.4	0.8	0.7	0.9
December .....	2.9	2.5	2.6	0.8	1.6	1.4	0.6	0.6	0.8
1976									
January .....	2.5	2.6	2.6	1.3	1.4	1.5	1.1	1.0	0.8
February .....	2.5	2.6	2.6	1.3	1.6	1.6	0.8	0.7	0.8
March .....	2.4	2.5	2.4	1.5	1.7	1.5	0.8	0.7	0.7
April .....	1.7	2.0	2.4	1.2	1.4	1.6	0.6	0.5	0.6
May .....	2.3	2.6	2.4	1.6	1.6	1.6	0.6	0.6	0.6
June .....	2.5	2.5	2.4	2.1	1.5	1.4	0.6	0.7	0.6
July .....	2.4	2.7	2.6	1.6	1.3	1.5	0.7	0.8	0.7
August .....	2.7	2.7	2.6	2.0	1.6	1.5	0.6	0.7	0.8
September .....	2.6	2.3	2.6	1.9	1.5	1.5	0.6	0.8	0.8
October .....	2.8	2.7	2.6	1.8	1.6	1.6	0.8	0.8	0.7
November .....	2.8	2.5	2.6	1.6	1.9	1.7	0.5	0.5	0.6
December .....	r3.2	r2.8	p2.7	0.9	1.7	(NA)	0.3	0.4	(NA)
1977									
January .....	p2.8	p2.9	(NA)	(NA)	(NA)		(NA)	(NA)	
February .....	(NA)	(NA)							
March .....									
April .....									
May .....									
June .....									
July .....									
August .....									
September .....									
October .....									
November .....									
December .....									

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See page 8.)

# defense indicators

TABLE

3

## Intermediate and Final Indicators of Defense Activity

Year and month	657. Output of defense and space equipment, FRB, seasonally adjusted*	659. Manufacturers' inventories, defense products, Census, seasonally adjusted*	661. Manufacturers' unfilled orders, defense products, Census, seasonally adjusted*	664. Manufacturers' unfilled orders from the U.S. Government, aerospace industries, Census, seasonally adjusted*	666. Defense Department progress payments outstanding, DOD, not seasonally adjusted*	670. Employment in defense products industries, total, BLS	
	(Index: 1967=100)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	Not seasonally adjusted (Thous.)	Seasonally adjusted* (Thous.)
1975							
January .....	82.1	5,487	27,221	...	...	1,178	1,175
February .....	79.9	5,565	27,815	...	...	1,141	1,141
March .....	79.7	5,639	27,823	20,907	9,609	1,137	1,142
April .....	80.2	5,750	28,238	...	...	1,121	1,128
May .....	80.9	5,890	28,604	...	...	1,131	1,140
June .....	81.6	6,051	28,459	21,230	10,464	1,123	1,127
July .....	81.0	6,207	28,920	...	...	1,110	1,117
August .....	80.6	6,252	29,007	...	...	1,100	1,108
September .....	81.2	6,399	29,706	20,906	11,008	1,104	1,100
October .....	78.5	6,456	29,237	...	...	1,097	1,090
November .....	77.3	6,549	29,264	...	...	1,089	1,077
December .....	77.7	6,568	29,210	21,776	11,257	1,088	1,075
1976							
January .....	78.0	6,488	28,449	...	...	1,084	1,081
February .....	77.6	6,523	28,438	...	...	1,075	1,076
March .....	77.4	6,634	29,069	22,596	9,848	1,071	1,077
April .....	77.3	6,720	29,550	...	...	1,066	1,072
May .....	78.2	6,824	29,727	...	...	1,061	1,070
June .....	78.3	6,774	30,294	22,533	12,041	1,060	1,064
July .....	78.0	6,846	29,422	...	...	1,043	1,050
August .....	78.6	6,804	29,153	...	...	1,053	1,060
September .....	77.7	6,798	29,188	r21,963	11,881	1,062	1,059
October .....	78.5	6,847	29,800	...	...	1,062	1,056
November .....	r77.9	6,847	30,698	...	...	1,066	1,054
December .....	r77.4	r6,577	32,231	p22,902	8,465	1,070	1,060
1977							
January .....	r77.5	6,609	r31,536			p1,067	p1,061
February .....	p79.6	(NA)	p30,962			(NA)	(NA)
March .....							
April .....							
May .....							
June .....							
July .....							
August .....							
September .....							
October .....							
November .....							
December .....							

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See pages 9 and 10.)

## Intermediate and Final Indicators of Defense Activity--Continued

Year and month	671. Employment in defense products industries, production workers, BLS		673. Index of aggregate weekly hours, defense products industries, BLS		675. Index of aggregate weekly payrolls, production workers, defense products industries, BLS	
	Not seasonally adjusted	Seasonally adjusted*	Not seasonally adjusted	Seasonally adjusted*	Not seasonally adjusted	Seasonally adjusted*
	(Thous.)	(Thous.)	(1967=100)	(1967=100)	(1967=100)	(1967=100)
1975						
January .....	618	615	69.2	69.2	102.8	102.6
February .....	589	589	67.0	67.0	98.6	98.4
March .....	585	588	66.8	67.0	99.1	99.4
April .....	570	574	66.1	66.8	97.6	99.5
May .....	581	588	66.5	66.8	100.2	101.3
June .....	573	577	66.4	66.6	101.2	102.3
July .....	564	570	65.0	66.1	97.9	101.7
August .....	555	563	64.9	65.6	98.3	101.0
September .....	558	556	65.5	65.1	102.0	101.2
October .....	554	549	64.9	64.5	101.5	100.4
November .....	549	540	64.6	63.5	101.8	98.7
December .....	549	538	65.0	63.8	104.9	99.8
1976						
January .....	545	542	64.1	64.1	101.3	101.1
February .....	540	540	63.5	63.5	100.7	100.4
March .....	537	539	63.3	63.6	100.8	101.1
April .....	533	537	62.0	62.7	96.1	99.3
May .....	530	536	62.6	63.0	99.2	100.0
June .....	529	533	62.6	62.8	99.4	100.2
July .....	510	516	61.2	62.2	96.0	99.8
August .....	520	528	62.0	62.7	99.2	101.6
September .....	529	528	62.4	62.0	101.9	101.1
October .....	529	525	62.4	62.0	104.0	102.6
November .....	532	523	63.5	62.5	106.5	103.4
December .....	r533	r524	r64.1	r62.7	r109.2	r103.8
1977						
January .....	p533	p529	p63.2	p63.0	p107.2	p106.3
February .....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
March .....						
April .....						
May .....						
June .....						
July .....						
August .....						
September .....						
October .....						
November .....						
December .....						

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See page 10.)

# defense indicators

TABLE

3

## Intermediate and Final Indicators of Defense Activity--Continued

Year and month	Defense Department personnel, DOD		Defense Department net outlays, DOD				
	677. Military, active duty, not seasonally adjusted*	678. Civilian, direct hire employment, not seasonally adjusted*	680. Total, military functions and military assistance			681. Operations	
			Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data--6-month*	Not seasonally adjusted	Seasonally adjusted
	(Thous.)	(Thous.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January .....	2,145	1,036	7,051	6,766	7,312	4,775	4,648
February .....	2,146	1,036	7,258	7,590	7,284	4,727	4,924
March .....	2,137	1,034	7,244	7,190	7,258	4,736	4,831
April .....	2,127	1,034	7,190	6,958	7,056	4,960	4,856
May .....	2,124	1,035	7,780	7,494	7,308	4,909	4,941
June .....	2,128	1,042	7,476	6,336	7,475	4,954	4,747
July .....	2,129	1,052	7,124	8,278	7,423	4,918	4,977
August .....	2,111	1,038	7,961	8,594	7,552	5,061	5,029
September .....	2,105	1,030	6,631	6,880	7,566	4,810	5,016
October .....	2,097	1,031	7,913	7,732	7,788	5,260	5,131
November .....	2,099	1,029	7,203	7,574	7,515	4,997	4,988
December .....	2,084	1,028	7,695	7,672	7,251	5,078	5,067
1976							
January .....	2,092	1,023	6,649	6,636	7,326	4,887	4,940
February .....	2,093	1,019	6,962	7,011	7,322	4,848	4,879
March .....	2,090	1,016	7,642	7,334	7,259	5,026	4,995
April .....	2,087	1,011	7,872	7,703	7,068	5,297	5,160
May .....	2,081	1,010	7,042	7,200	7,406	4,889	5,023
June .....	2,082	1,010	7,843	6,525	7,486	5,170	4,925
July .....	2,087	1,014	7,433	8,663	7,563	5,050	5,135
August .....	2,085	1,006	7,163	7,493	7,546	5,059	5,054
September .....	2,084	997	7,513	7,794	7,562	5,457	5,543
October .....	2,086	995	7,478	7,600	7,657	4,984	5,015
November .....	2,082	996	7,301	7,294	r7,477	5,277	5,220
December .....	2,072	995	7,422	7,096	p7,613	5,356	5,190
1977							
January .....	2,077	994	r6,979	r7,586		r5,262	r5,436
February .....	p2,078	(NA)	p8,001	p8,308		p5,202	p5,430
March .....							
April .....							
May .....							
June .....							
July .....							
August .....							
September .....							
October .....							
November .....							
December .....							

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See pages 10 and 11.)



## Intermediate and Final Indicators of Defense Activity--Continued

	Defense Department net outlays, DOD—Continued			683. Budget outlays for the national defense function, Treasury		685. Defense Department personnel compensation, DOD	
Year and month	682. Procurement			Seasonally adjusted*	Moving average of seasonally adjusted data—6-month*	Not seasonally adjusted	Seasonally adjusted*
	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data—6-month*				
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January .....	1,427	1,428	1,460	7,039	7,554	2,913	2,768
February .....	1,351	1,444	1,429	7,896	7,526	2,808	2,869
March .....	1,500	1,440	1,414	7,385	7,536	2,812	2,850
April .....	1,220	1,194	1,354	7,297	7,342	2,867	2,870
May .....	1,467	1,406	1,328	7,788	7,564	2,870	2,877
June .....	1,409	1,215	1,360	6,649	7,747	2,823	2,887
July .....	1,225	1,268	1,322	8,367	7,706	2,941	2,895
August .....	1,559	1,634	1,361	8,996	7,818	2,873	2,910
September .....	1,191	1,217	1,330	7,140	7,836	2,936	2,961
October .....	1,500	1,425	1,365	7,971	8,079	3,008	2,954
November .....	1,081	1,220	1,384	7,896	7,830	2,866	2,893
December .....	1,319	1,427	1,328	8,103	7,352	2,916	2,904
1976							
January .....	1,363	1,384	1,305	6,874	7,411	3,018	2,907
February .....	1,227	1,293	1,382	6,126	7,380	2,820	2,804
March .....	1,195	1,082	1,361	7,497	7,286	2,887	2,866
April .....	1,792	1,884	1,330	7,784	7,068	2,845	2,861
May .....	1,092	1,095	1,321	7,334	7,376	2,851	2,889
June .....	1,418	1,244	1,281	6,795	7,589	3,007	3,036
July .....	1,347	1,326	1,338	8,717	7,656	2,963	2,960
August .....	1,063	1,055	1,241	7,409	7,649	2,962	2,962
September .....	1,356	1,423	1,328	7,896	7,653	2,978	2,997
October .....	1,337	1,303	1,418	7,743	7,776	3,026	3,037
November .....	1,502	1,617	1,462	7,360	7,610	3,020	2,978
December .....	1,745	1,781	p1,561	7,530	7,764	3,097	3,088
1977							
January .....	1,524	1,594		7,082		p3,034	p2,951
February .....	p1,570	p1,646		8,131		(NA)	(NA)
March .....							
April .....							
May .....							
June .....							
July .....							
August .....							
September .....							
October .....							
November .....							
December .....							

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See page 11.)

# defense indicators

TABLE

3

## Intermediate and Final Indicators of Defense Activity--Continued

Year and month	688. Manufacturers' shipments, defense products, Census		689. Manufacturers' shipments to the U.S. Government, aerospace industries, Census, seasonally adjusted*	691. Ratio, manufacturers' unfilled orders to shipments, defense products, Census		693. Ratio, manufacturers' inventories to shipments, defense products, Census	
	Seasonally adjusted*	Moving average of seasonally adjusted data--5-month*		Seasonally adjusted*	Moving average of seasonally adjusted data--5-month*	Seasonally adjusted*	Moving average of seasonally adjusted data--5-month*
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Ratio)	(Ratio)	(Ratio)	(Ratio)
1975							
January .....	1,923	1,902	...	14.2	14.6	2.9	2.9
February .....	1,982	1,950	4,105	14.0	14.3	2.8	2.9
March .....	1,989	1,965	...	14.0	14.2	2.8	2.9
April .....	2,030	1,969	...	13.9	14.3	2.8	2.9
May .....	1,901	1,954	4,104	15.0	14.5	3.1	3.0
June .....	1,943	1,965	...	14.6	14.6	3.1	3.1
July .....	1,906	1,931	...	15.2	15.0	3.3	3.2
August .....	2,043	1,967	4,847	14.2	14.8	3.1	3.2
September .....	1,864	1,993	...	15.9	14.7	3.4	3.2
October .....	2,079	2,010	...	14.1	14.6	3.1	3.2
November .....	2,073	2,042	4,283	14.1	14.3	3.2	3.2
December .....	1,991	2,110	...	14.7	13.7	3.3	3.1
1976							
January .....	2,201	2,132	...	12.9	13.6	2.9	3.1
February .....	2,206	2,159	4,555	12.9	13.4	3.0	3.0
March .....	2,187	2,206	...	13.3	13.2	3.0	3.0
April .....	2,210	2,175	...	13.4	13.6	3.0	3.1
May .....	2,224	2,156	5,047	13.4	13.8	3.1	3.1
June .....	2,047	2,156	...	14.8	13.8	3.3	3.1
July .....	2,111	2,137	...	13.9	13.8	3.2	3.2
August .....	2,188	2,150	r4,520	13.3	13.8	3.1	3.2
September .....	2,117	2,199	...	13.8	13.5	3.2	3.1
October .....	2,289	2,269	...	13.0	13.3	3.0	3.0
November .....	2,289	r2,311	p4,973	13.4	13.3	3.0	2.9
December .....	2,463	p2,411	...	13.1	p12.9	2.7	(NA)
1977							
January .....	r2,396	...	...	r13.2	...	2.8	...
February .....	p2,618	...	...	p11.8	...	(NA)	...
March .....	...	...	...	...	...	...	...
April .....	...	...	...	...	...	...	...
May .....	...	...	...	...	...	...	...
June .....	...	...	...	...	...	...	...
July .....	...	...	...	...	...	...	...
August .....	...	...	...	...	...	...	...
September .....	...	...	...	...	...	...	...
October .....	...	...	...	...	...	...	...
November .....	...	...	...	...	...	...	...
December .....	...	...	...	...	...	...	...

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See page 12.)

TABLE

4

## Defense-Related Balance of Payments Components

Year and quarter	546. Transfers under U.S. military agency sales contracts (exports), BEA <sup>1</sup>		547. Direct defense expenditures (imports), BEA, not seasonally adjusted <sup>*</sup>	696. U.S. Government cash receipts associated with military sales contracts, BEA <sup>2</sup>	
	Not seasonally adjusted	Seasonally adjusted <sup>*</sup>		Not seasonally adjusted	Seasonally adjusted <sup>*</sup>
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1973					
First quarter . . . . .	332	347	1,169	520	566
Second quarter . . . . .	504	455	1,231	544	552
Third quarter . . . . .	489	531	1,067	610	617
Fourth quarter . . . . .	1,017	1,009	1,162	616	555
1974					
First quarter . . . . .	644	638	1,153	497	538
Second quarter . . . . .	738	683	1,298	642	674
Third quarter . . . . .	720	781	1,265	995	989
Fourth quarter . . . . .	850	850	1,319	808	741
1975					
First quarter . . . . .	931	915	1,317	1,050	1,094
Second quarter . . . . .	865	807	1,185	1,013	1,047
Third quarter . . . . .	906	978	1,093	1,148	1,135
Fourth quarter . . . . .	1,195	1,197	1,185	1,380	1,315
1976					
First quarter . . . . .	1,162	r1,135	1,150	2,250	2,294
Second quarter . . . . .	1,144	r1,064	1,219	1,856	1,893
Third quarter . . . . .	1,470	r1,574	r1,235	r2,036	r2,020
Fourth quarter . . . . .	p1,429	p1,431	p1,208	p2,147	p2,082
1977					
First quarter . . . . .					
Second quarter . . . . .					
Third quarter . . . . .					
Fourth quarter . . . . .					

NA=not available; p=preliminary; r=revised; e=estimated. \*Indicates series shown in charts. (See page 13.)

<sup>1</sup>Includes deliveries for which Israel has been released from its contractual liability to pay. <sup>2</sup>Excludes funds made available to release Israel from its contractual liability to pay for defense articles and services purchased through military sales contracts. Quarterly expenditures for such purpose under Public Law 93-199 and subsequent legislation amounted to (in millions): 1974, I1Q, \$623; IIIQ, \$223; IVQ, \$91; 1975, IQ, \$187; IIQ, \$124; IIIQ, \$83; IVQ, \$242; 1976, IQ, \$107; IIQ, \$9; IIIQ, \$743; IVQ, \$5.

# Appendix A. SEASONAL ADJUSTMENT FACTORS

Series title	1976						1977					
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
<b>MONTHLY SERIES</b>												
Defense Department gross obligations incurred:												
617. Total <sup>1</sup>	118.2	108.7	94.4	103.1	92.9	90.0	99.9	88.2	94.7	94.6	78.0	135.2
619. Operations <sup>1</sup>	118.5	100.9	96.6	106.2	90.5	90.8	103.9	88.4	93.4	101.5	89.3	117.8
621. Procurement	84.0	83.5	100.3	107.2	110.6	87.3	116.1	99.4	105.0	81.2	63.1	161.4
623. Gross obligations incurred outside the Federal Government for national defense <sup>1</sup>	117.7	110.0	96.5	95.2	103.3	90.4	101.3	84.9	99.6	94.1	82.8	126.3
625. Defense Department military prime contract awards for work performed in the United States	116.0	108.3	100.1	105.5	88.5	87.4	96.6	82.4	89.3	73.3	70.6	177.9
Defense Department gross unpaid obligations outstanding: <sup>2</sup>												
643. Total	100.3	102.7	103.1	104.5	103.1	100.5	101.8	100.0	98.0	96.5	92.4	96.7
644. Operations	102.5	106.8	105.6	112.0	105.1	100.2	104.6	98.2	91.9	93.6	87.4	91.7
645. Procurement	97.7	98.3	98.7	99.3	100.7	100.5	101.7	101.8	101.4	99.3	96.4	100.0
648. Manufacturers' new orders, defense products <sup>3</sup>	162.3	86.9	114.6	108.2	86.1	107.7	98.7	92.1	92.2	88.8	67.6	94.9
653. Average weekly overtime hours, production workers, defense products industries <sup>4</sup>	-.3	.0	.3	.1	.3	.4	-.1	-.1	-.2	-.4	-.2	.0
654. Accession rate, defense products industries <sup>4</sup>	.3	.4	.4	.2	-.3	-.8	-.2	-.3	-.2	-.2	.0	.6
655. Layoff rate, defense products industries <sup>4</sup>	-.1	-.1	-.2	.0	.0	-.1	.1	.1	.2	.1	.0	.0
657. Output of defense and space equipment <sup>4</sup>	98.3	98.5	99.3	99.9	101.0	102.3	100.3	100.3	100.4	99.1	99.6	100.6
659. Manufacturers' inventories, defense products <sup>3</sup>	100.1	99.2	99.8	100.6	100.6	99.4	99.7	99.7	100.1	100.6	100.1	99.7
661. Manufacturers' unfilled orders, defense products <sup>3</sup>	101.1	100.1	101.0	101.5	100.4	100.4	101.0	100.5	100.0	99.3	97.2	96.5
Employment in defense products industries:												
670. Total	99.3	99.3	100.3	100.6	101.1	100.9	100.5	99.8	99.5	99.4	99.3	99.7
671. Production workers	99.0	98.5	100.3	100.8	101.7	101.7	100.8	99.9	99.5	99.2	99.0	99.6
673. Index of aggregate weekly hours, defense products industries	98.4	98.9	100.6	100.6	101.7	102.1	100.3	99.9	99.6	98.5	99.6	99.9
675. Index of aggregate weekly payrolls, production workers, defense products industries	96.2	97.5	100.8	101.4	103.0	105.2	100.9	100.1	99.7	96.6	99.2	99.3
Defense Department net outlays:												
680. Total, military functions and military assistance <sup>1</sup>	85.8	95.6	96.4	98.4	100.1	104.6	92.0	96.3	105.6	99.5	98.1	118.0
681. Operations <sup>1</sup>	98.3	100.2	98.5	99.4	101.1	103.2	96.8	95.8	100.5	100.8	98.5	105.1
682. Procurement <sup>1</sup>	101.6	100.8	95.3	102.6	92.9	98.0	95.6	95.4	109.4	100.2	97.5	113.9
683. Budget outlays for the national defense function <sup>1</sup>	85.6	98.1	97.0	98.2	101.0	100.6	91.7	97.6	105.5	99.7	98.9	117.6
685. Defense Department personnel compensation <sup>1</sup>	100.1	100.0	99.4	99.6	101.4	100.3	102.8	97.8	100.6	98.2	99.9	99.0
688. Manufacturers' shipments, defense products <sup>3</sup>	98.4	99.2	103.5	98.8	102.6	107.8	88.3	96.6	99.4	99.4	99.4	105.4
<b>QUARTERLY SERIES</b>												
	IIIQ			IVQ			IQ			IIQ		
200. Gross national product <sup>3</sup>	98.5			104.7			95.9			100.5		
264. Fed. Govt. purchases of goods and services, national defense <sup>3</sup>	95.0			102.0			101.5			101.7		
546. Transfers under U.S. military agency sales contracts—exports <sup>3</sup>	-72			-2			16			58		
Defense Department military prime contract awards:												
626. Aircraft	105.9			95.0			109.0			90.1		
627. Missile and space systems	145.5			105.3			68.9			80.7		
629. Weapons and ammunition	50.4			88.8			93.2			167.3		
630. Electronic and communications equipment	93.1			94.8			90.9			121.2		
631. Combat vehicles	113.0			73.6			52.8			164.5		
632. Other hard goods	74.9			88.3			90.7			146.1		
633. Soft goods	150.3			87.4			93.4			72.2		
634. Construction	63.2			67.5			67.5			197.2		
635. Services	124.5			97.8			69.2			103.6		
636. Under \$10,000	83.6			96.6			96.7			122.8		
637. Educational and nonprofit institutions	142.6			98.2			77.6			76.0		
640. Outside U.S.	162.2			89.1			71.4			92.3		
Aerospace industries:												
650. Manufacturers' new orders from the U.S. Government	123.4			104.4			90.5			82.7		
664. Manufacturers' unfilled orders from the U.S. Government	101.2			102.1			101.3			96.2		
689. Manufacturers' shipments to the U.S. Government	100.6			102.6			93.8			102.6		
696. U.S. Govt. cash receipts associated with military sales contracts <sup>5</sup>	13			65			-44			-34		

NOTE: The seasonal adjustment factors presented in this table were computed using the techniques described in the Bureau of the Census Technical Paper No. 15, *The X-11 Variant of the Census Method II Seasonal Adjustment Program*.

Monthly data for Defense Department military prime contract awards by commodity category (series 626 to 640) have not been adjusted for seasonal variation. The series on direct defense expenditures—imports (series 547), Defense Department progress payments outstanding (series 686), and Defense Department personnel (series 677 and 678) contain no measurable seasonal variation.

<sup>1</sup> Factors are products of seasonal and trading-day factors.

<sup>2</sup> Prior to 1972, data for gross unpaid obligations outstanding are not available for a number

of months but these gaps were filled with averages of preceding and following months for purposes of estimating seasonal variation.

<sup>3</sup> These series have been adjusted by the source agencies. The factors shown here are implicit seasonal factors for the calendar year 1975 and are derived by dividing the seasonally unadjusted data by the seasonally adjusted data.

<sup>4</sup> These series have been seasonally adjusted using the additive version of the seasonal adjustment program. Seasonally adjusted data are derived by subtracting the adjustment factor from the unadjusted data. Seasonally adjusted data for other series are derived by dividing the seasonal factors into the unadjusted data.

<sup>5</sup> This series is the total of component series which have been adjusted separately by the source agency. The factors shown here are implicit seasonal factors for the calendar year 1975 and are derived by subtracting the seasonally adjusted data from the seasonally unadjusted data.

# Appendix B. AVERAGE CHANGES AND RELATED MEASURES OF VARIABILITY

## Part 1. Monthly Series

Series title	Period covered	$\bar{O}$	$\bar{CI}$	$\bar{T}$	$\bar{C}$	$\bar{I/C}$	MCD	Average duration of run (ADR)	
								CI	MCD
Defense Department gross obligations incurred:									
617. Total . . . . .	Jan. '57-Jan. '76 . . .	18.28	6.98	6.89	0.72	9.53	6	1.53	2.30
619. Operations . . . . .	July '59-Jan. '76 . . .	8.98	2.77	2.66	.65	4.09	4	1.69	3.00
621. Procurement . . . . .	Jan. '57-Jan. '76 . . .	44.28	22.39	22.27	1.54	14.44	6	1.46	2.08
623. Gross obligations incurred outside the Federal Government for national defense . . . . .	July '63-Sept. '75 . . .	14.17	7.92	7.82	.73	10.72	6	1.52	2.61
625. Defense Department military prime contract awards for work performed in the United States, total . . . . .	Jan. '57-Jan. '76 . . .	32.78	15.55	15.41	1.35	11.42	6	1.42	2.05
Defense Department gross unpaid obligations outstanding:									
643. Total . . . . .	Jan. '57-Jan. '76 . . .	2.13	1.32	.95	.88	1.08	2	2.65	3.98
644. Operations . . . . .	Jan. '67-Jan. '76 . . .	5.59	2.68	2.37	1.13	2.10	3	1.96	5.05
645. Procurement . . . . .	Jan. '67-Jan. '76 . . .	2.19	1.52	1.07	.94	1.14	2	2.08	4.12
Manufacturers' new orders:									
647. Defense products industries . . . . .	Jan. '57-Mar. '72 . . .	(NA)	15.11	14.89	.97	15.32	6	1.58	2.33
648. Defense products . . . . .	Feb. '68-Jan. '76 . . .	(NA)	21.50	21.43	1.47	14.59	6	1.56	1.80
*653. Average weekly overtime hours, production workers, defense products industries (hours) . . . . .	Jan. '58-Jan. '76 . . .	.22	.11	.11	.03	3.14	4	2.50	3.70
*654. Accession rate, defense products industries (per 100 employees) . . . . .	Jan. '58-Jan. '76 . . .	.38	.16	.15	.05	3.12	4	2.16	4.18
*655. Layoff rate, defense products industries (per 100 employees) . . . . .	Jan. '58-Jan. '76 . . .	.17	.14	.13	.04	3.14	4	1.93	4.18
657. Output of defense and space equipment . . . . .	Jan. '57-Jan. '76 . . .	(NA)	.96	.50	.75	.67	1	3.40	3.40
Manufacturers' inventories:									
658. Defense products industries . . . . .	Jan. '57-Mar. '72 . . .	(NA)	1.04	.52	.85	.62	1	2.80	2.80
659. Defense products . . . . .	Jan. '68-Jan. '76 . . .	(NA)	1.75	1.13	1.29	.88	1	3.10	3.10
Manufacturers' unfilled orders:									
660. Defense products industries . . . . .	Jan. '57-Mar. '72 . . .	(NA)	1.23	.90	.83	1.09	2	2.76	3.42
661. Defense products . . . . .	Jan. '68-Jan. '76 . . .	(NA)	1.51	1.18	.93	1.27	2	2.04	4.13
Employment in defense products industries:									
670. Total . . . . .	Jan. '58-Jan. '76 . . .	.76	.70	.29	.59	.50	1	4.91	4.91
671. Production workers . . . . .	Jan. '58-Jan. '76 . . .	1.08	.93	.51	.70	.73	1	3.72	3.72
673. Index of aggregate weekly hours, defense products industries . . . . .	Jan. '58-Jan. '76 . . .	.95	.76	.39	.60	.65	1	4.00	4.00
675. Index of aggregate weekly payrolls, production workers, defense products industries . . . . .	Jan. '58-Jan. '76 . . .	1.72	1.14	.75	.78	.96	1	2.92	2.92
Defense Department personnel:									
677. Military, active duty <sup>(U)</sup> . . . . .	Jan. '57-Jan. '76 . . .	.62	(NA)	.27	.55	.48	1	3.86	3.86
678. Civilian, direct hire employment <sup>(U)</sup> . . . . .	Jan. '57-Jan. '76 . . .	.55	(NA)	.34	.42	.81	1	4.30	4.30
Defense Department net outlays:									
680. Total, military functions and military assistance . . . . .	Jan. '57-Jan. '76 . . .	8.89	4.31	4.19	.77	5.42	6	1.70	3.10
681. Operations . . . . .	July '59-Jan. '76 . . .	7.07	3.62	3.41	.73	4.69	5	1.58	2.34
682. Procurement . . . . .	Jan. '57-Jan. '76 . . .	15.10	11.77	11.65	1.59	7.32	6	1.57	2.90
683. Budget outlays for the national defense function . . . . .	Jan. '57-Jan. '76 . . .	8.87	4.27	4.18	.73	5.73	6	1.58	2.97
685. Defense Department personnel compensation . . . . .	Jan. '67-Jan. '76 . . .	2.70	1.33	1.13	.49	2.32	4	2.57	4.38
Manufacturers' shipments:									
687. Defense products industries . . . . .	Jan. '57-Mar. '72 . . .	(NA)	2.67	2.49	.87	2.85	3	1.64	3.40
688. Defense products . . . . .	Jan. '68-Jan. '76 . . .	(NA)	4.40	4.34	.98	4.41	5	1.57	2.71
Ratio, manufacturers' unfilled orders to shipments:									
690. Defense products industries . . . . .	Jan. '57-Mar. '72 . . .	(NA)	2.95	2.71	.96	2.82	4	1.90	3.81
691. Defense products . . . . .	Jan. '68-Jan. '76 . . .	(NA)	4.93	4.81	1.01	4.77	5	1.69	2.85
Ratio, manufacturers' inventories to shipments:									
692. Defense products industries . . . . .	Jan. '57-Mar. '72 . . .	(NA)	2.84	2.90	.72	4.01	5	2.46	5.74
693. Defense products . . . . .	Jan. '68-Jan. '76 . . .	(NA)	5.29	5.18	1.13	4.57	5	1.96	3.07

NA = not available.

\*Measures for these series are based on actual changes rather than percent changes (see definition below). <sup>(U)</sup> indicates measures are based on unadjusted data.

### BRIEF DEFINITIONS OF MEASURES SHOWN IN PART 1

The measures in this appendix provide a historical perspective for interpreting current changes in each series. They are derived using the Census X-11 seasonal adjustment program. Brief definitions of the measures are given below; more complete definitions appear in *Electronic Computers and Business Indicators* by Julius Shiskin, issued as Occasional Paper 57 by the National Bureau of Economic Research, 1957 (reprinted from *Journal of Business*, October 1957).

" $\bar{O}$ " is the average month-to-month percent change, without regard to sign, in the original unadjusted series. (See final paragraph below for exceptions to these definitions.)

" $\bar{CI}$ " is the same for the seasonally adjusted series.

" $\bar{C}$ " is the same for the short-term trend, which is a smooth, flexible moving average of the seasonally adjusted series.

" $\bar{T}$ " is the same for the irregular component, which is obtained by dividing the seasonally adjusted series by the short-term trend.

" $\bar{I/C}$ " measures the relative smoothness (small values) or irregularity (large values) of the seasonally adjusted series. It is the ratio of the average monthly percent change (without regard to sign) in the irregular component to the average monthly percent change (without regard to sign) in the short-term trend.

"MCD" (months for cyclical dominance) estimates the number of months required for the short-term trend to dominate the irregular component. Average percent changes are computed for spans of from 1 to 12 months for both the irregular component and the short-term trend. MCD is the shortest span of months for which the average percent change (without regard to sign) in the short-term trend is greater than that in the irregular component. All MCD's greater than "5" are shown as "6".



## Appendix B. AVERAGE CHANGES AND RELATED MEASURES OF VARIABILITY—Continued

"Average Duration of Run" (ADR) is another measure of smoothness and is equal to the average number of consecutive monthly changes in the same direction in any series of observations. When there is no change between two observations, a change in the same direction as the preceding change is assumed. The ADR is shown for the seasonally adjusted series (CI) and the MCD curve, which is a moving average (with the number of terms equal to MCD) of the seasonally adjusted series. A comparison of these measures with the expected ADR of a random series indicates whether the changes approximate those of a random series. In a random series, the expected ADR is 1.5 and the actual values fall between 1.36 and 1.75 about 95 percent of the time. For a moving average of a random series, the expected ADR is 2.

Measures for series identified with an asterisk (\*) are computed by an additive method. This method is used for series with zero or negative data, series which could approach zero, and series expressed in percent. In this method, the measures are defined the same as above except for two differences: (1) the measures are based on actual month-to-month changes (rather than percent changes) and (2) the irregular component is obtained by subtracting the short-term trend from the seasonally adjusted series. The average changes shown above for the components of such a series are in the same unit of measure as the series itself. The unit is indicated in the series title.

### Part 2. Quarterly Series

Series title	Period covered	$\bar{Q}$	$\bar{CI}$	$\bar{I}$	$\bar{C}$	$\bar{I}/\bar{C}$	QCD	Average duration of run (ADR)	
								CI	QCD
200. Gross national product .....	IQ '57-IVQ '75 ...	(NA)	1.84	0.35	1.76	0.20	1	8.33	8.33
264. Federal Government purchases of goods and services, national defense ...	IQ '57-IVQ '75 ...	(NA)	1.95	.79	1.70	.46	1	3.26	3.26
*546. Transfers under U.S. military agency sales contracts—exports (mil. dol.) ..	IQ '60-IVQ '75 ...	79.21	65.13	48.28	34.19	1.41	2	1.70	2.30
*547. Direct defense expenditures—imports (mil. dol.) (U) ..	IQ '60-IVQ '75 ...	42.32	(NA)	36.13	24.65	1.47	2	1.66	2.82
*613. National defense purchases as a percent of GNP (percent) .....	IQ '57-IVQ '75 ...	(NA)	.16	.07	.15	.46	1	5.36	5.36
650. Manufacturers' new orders from the U.S. Government, aerospace industries .....	IQ '61-IVQ '75 ...	24.44	17.96	14.82	5.85	2.53	3	1.44	1.73
664. Manufacturers' unfilled orders from the U.S. Government, aerospace industries .....	IQ '61-IVQ '75 ...	4.55	3.91	2.44	2.68	.91	1	2.27	2.27
666. Defense Department progress payments outstanding (U) .....	IQ '57-IVQ '75 ...	4.80	(NA)	2.06	4.35	.47	1	2.78	2.78
689. Manufacturers' shipments to the U.S. Government, aerospace industries ..	IQ '61-IVQ '75 ...	7.04	4.27	3.43	2.11	1.62	2	1.84	2.76
*696. U.S. Government cash receipts associated with military sales contracts (million dollars) .....	IQ '60-IVQ '75 ...	107.60	83.62	61.48	45.74	1.34	2	1.57	2.82

NA = not available.

\*Measures for these series are based on actual changes rather than percent changes (see definition below). (U) indicates measures are based on unadjusted data.

#### BRIEF DEFINITIONS OF MEASURES SHOWN IN PART 2

These measures are defined the same as those in part 1 except that they are based on quarter-to-quarter percent changes. For example,  $\bar{CI}$  is the average quarter-to-quarter percent change (without regard to sign) in the seasonally adjusted series.

In deriving "QCD" (quarters for cyclical dominance), average percent changes are computed for spans of from one to four quarters for the irregular component and the short-term trend. QCD is the shortest span of quarters for

which the average percent change (without regard to sign) in the short-term trend is greater than that in the irregular component. All QCD's greater than "3" are shown as "4". The "Average Duration of Run" (ADR) measures are also expressed in quarters.

As in part 1, measures for series identified with an asterisk (\*) are computed by an additive method. This method is the same as that used for the monthly series except for the use of quarterly data rather than monthly.







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# ALPHABETICAL INDEX—SERIES FINDING GUIDE

Series title	Series number	Current issue (page numbers)		Historical data (issue date)	Series descriptions (issue date)	Series title	Series number	Current issue (page numbers)		Historical data (issue date)	Series descriptions (issue date)
		Charts	Tables					Charts	Tables		
Accession rate, defense products industries .....	654	8	21	6/76	4/73	Hours, defense products industries .....	673	10	23	7/76	4/73
Aerospace industries .....											
Manufacturers' new orders from U.S. Government ..	650	See New orders.				Inventories, manufacturers' .....					
Manufacturers' shipments to U.S. Government .....	689	See Shipments.				Defense products .....	659	9	22	2/77	2/73
Manufacturers' unfilled orders from U.S. Government	664	See Unfilled orders.				Defense products industries .....	658	9	...	1/72	2/73
						Ratio to shipments, defense products .....	683	12	26	2/77	2/73
						Ratio to shipments, defense products industries .....	682	12	...	11/72	2/73
Balance of payments (defense-related)											
Cash receipts associated with military sales contracts	696	13	27	8/76	10/73	Layoff rate, defense products industries .....	655	8	21	6/76	4/73
Direct defense expenditures .....	547	13	27	8/76	10/73						
Transfers under military agency sales contracts .....	546	13	27	8/76	10/73	Military personnel, Defense Department .....	677	10	24	9/76	8/68
Budget outlays for national defense function .....	683	See Outlays.				Military prime contract awards—See Contract awards.					
Cash receipts associated with military sales contracts ..	696	See Balance of payments.				Net outlays, Defense Department—See Outlays.					
Civilian personnel, Defense Department .....	678	10	24	9/76	8/68	New orders, manufacturers' .....					
Compensation .....						Defense products .....	648	7	20	2/77	2/73
Payrolls, aggregate weekly, defense products	675	10	23	7/76	4/73	Defense products industries .....	647	7	...	11/72	2/73
Personnel compensation, Defense Department .....	685	11	25	7/76	8/68	From Government, aerospace industries .....	650	8	20	5/75	2/73
Contract awards, military prime .....											
Aircraft .....	626	...	16	10/76	8/68	Obligations incurred, gross .....					
Civilian Health and Medical Program .....	638	...	19	10/76	...	Defense Department, operations .....	619	...	15	6/76	8/68
Combat vehicles .....	631	...	17	10/76	8/68	Defense Department, procurement .....	621	6	15	6/76	8/68
Construction .....	634	...	18	10/76	8/68	Defense Department, total .....	617	6	15	6/76	8/68
Contracts under \$10,000 .....	636	...	19	10/76	8/68	Outside Government for national defense .....	623	6	16	6/76	10/73
Educational and nonprofit institutions .....	637	...	19	10/76	8/68	Obligations outstanding, gross unpaid .....					
Electronic and communications equipment .....	630	...	17	10/76	8/68	Defense Department, operations .....	644	...	20	6/76	8/68
Missile and space systems .....	627	...	16	10/76	8/68	Defense Department, procurement .....	645	...	20	6/76	8/68
Other hard goods .....	632	...	18	10/76	8/68	Defense Department, total .....	643	7	20	6/76	8/68
Services .....	635	...	18	10/76	8/68	Operations, Defense Department .....					
Ships .....	628	...	17	10/76	8/68	Net outlays .....	681	See Outlays.			
Soft goods .....	633	...	18	10/76	8/68	Obligations incurred .....	619	See Obligations incurred.			
Total .....	625	7	16	10/76	8/68	Unpaid obligations outstanding .....	644	See Obligations outstanding.			
Weapons and ammunition .....	629	...	17	10/76	8/68	Orders—See New orders and Unfilled orders.					
Work outside the United States .....	640	...	19	10/76	8/68	Outlays .....					
						Budget outlays for national defense function .....	683	11	25	7/76	10/73
Defense and space equipment, output .....	657	See Output of defense and space equipment.				Defense Department, operations .....	681	...	24	7/76	8/68
Defense Department .....						Defense Department, procurement .....	682	11	25	7/76	8/68
Gross obligations incurred—See Obligations incurred.						Defense Department, total .....	680	11	24	7/76	8/68
Gross unpaid obligations outstanding—See						Output of defense and space equipment .....	657	9	22	8/75	10/73
Obligations outstanding .....						Overtime hours, defense products industries .....	653	8	21	6/76	4/73
Military prime contract awards—See Contract awards.											
Net outlays—See Outlays.						Payrolls, aggregate weekly, defense products industries ..	675	See Compensation.			
Personnel compensation .....	685	See Compensation.				Personnel compensation, Defense Department .....	685	See Compensation.			
Personnel—See Civilian personnel and Military						Personnel—See Civilian personnel and Military personnel,					
personnel .....						Procurement, Defense Department .....					
Progress payments outstanding .....	666	See Progress payments.				Net outlays .....	682	See Outlays.			
Direct defense expenditures .....	547	See Balance of payments.				Obligations incurred .....	621	See Obligations incurred.			
						Unpaid obligations outstanding .....	645	See Obligations outstanding.			
						Progress payments outstanding, Defense Department .....	666	9	22	5/75	8/68
Employment .....						Purchases of goods and services for national defense .....	264	See Gross national product.			
Accession rate, defense products industries .....	654	See Accession rate.									
Employment, production workers, defense products	671	10	23	7/76	4/73	Shipments, manufacturers' .....					
industries .....	670	10	22	6/76	4/73	Defense products industries .....	688	12	26	2/77	2/73
Hours, defense products industries .....	673	See Hours.				Ratio, inventories to shipments, defense products .....	687	12	...	11/72	2/73
Layoff rate, defense products industries .....	655	See Layoff rate.				Ratio, inventories to shipments, defense products	683	See Inventories.			
Overtime hours, defense products industries .....	653	See Overtime hours.				industries .....	682	See Unfilled orders.			
Personnel—See Civilian personnel and Military						Ratio, unfilled orders to shipments, defense products	691	See Unfilled orders.			
personnel .....						Ratio, unfilled orders to shipments, defense products	690	See Unfilled orders.			
Expenditures—See Outlays.						Ratio, unfilled orders to shipments, defense products	689	12	26	5/75	2/73
						To Government, aerospace industries .....					
Federal purchases of goods and services for national						Transfers under military agency sales contracts .....	546	See Balance of payments.			
defense .....	264	See Gross national product.									
						Unfilled orders, manufacturers' .....					
Gross national product .....						Defense products .....	661	9	22	2/77	2/73
Federal purchases of goods and services for national	264	5	14	8/76	10/73	Defense products industries .....	680	9	...	7/71	2/73
defense .....	200	5	14	8/76	10/73	From Government, aerospace industries .....	664	9	22	5/75	2/73
Gross national product .....	613	5	14	8/76	10/73	Ratio to shipments, defense products .....	691	12	26	2/77	2/73
National defense purchases as percent of GNP .....						Ratio to shipments, defense products industries .....	690	12	...	11/72	2/73
Gross obligations incurred—See Obligations incurred.						Unpaid obligations outstanding—See Obligations					
Gross unpaid obligations outstanding—See Obligations						outstanding .....					

